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Contents — August 8, 1935

To "Share" Wealth Is to Destroy Wealth.....	11
Shorterizing, a Method of Surface Hardening.....	12
Billet Gauger Controlled by Seated Operator.....	18
The Tungsten Carbide Tool.....	20
Plastics Industry Broadens Its Field.....	22
Steel Parts Carburized by Eutectrol Process.....	24
Coating Strip With Copper Lead.....	25
Machine Tool Exports.....	26
This Plant Was Struck by Lightning.....	27
News	52
Personals and Obituaries	58
Washington	60
Automotive Industry	68
Rate of Activity in Capital Goods.....	72
Statistics on Metal-Working Activity.....	74
Markets	75
Construction and Equipment Buying.....	96
Products Advertised	124
Index to Advertisers	146

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... THE IRON AGE ...

AUGUST 8, 1935

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To "Share" Wealth Is to Destroy Wealth

A READER has taken exception to our editorial of July 11 in which the "share-the-wealth" principle of taxation was opposed. He says, in part:

Redistribution of wealth has become imperative to restore adequate buying power among the masses. . . . No country . . . can be truly progressive when the extremely wealthy abuse their power to keep the lower classes in a state of quasi-slavery and resort to all kinds of chicanery to evade their lawful responsibilities instead of assuming their fair share of taxes. . . .

No one, least of all the writer, will deny that taxes should be imposed in proportion to ability to pay, and no one can dispute the fact that there are plenty of men of wealth who have contrived to evade paying their fair share of taxes. But selfishness, deceit and arrogance on the part of individuals do not condemn a whole class. Wealth is not an evil per se. On the contrary, it may be and often is a great power for good.

Taxes that are confiscatory, i.e., taxes designed to take wealth away from those who possess it *because* they possess it, are quite different in aim from imposts levied for increased revenue. The principle of confiscation, once recognized, would most certainly undermine incentive for enterprise and thrift, and would blight rather than expand mass buying power.

Inheritance taxes, for example, that would be so onerous as to wrest control of an enterprise from the group which had built it up

might prove calamitous. Wealth is not synonymous with the power to create more wealth. The so-called profit system is really a "hope-for-profit" system. Wealth, unless it is coupled with managerial skill, is soon dissipated. Let us assume that Henry Ford died and that the inheritance levies were so heavy that his properties had to be sold. Is there any assurance that the new management would succeed? Failures in the automobile industry have greatly outnumbered successes.

In the last analysis, real wealth is intangible—it consists of the ability, based on experience, vision, skill and creative genius, to produce commodities or services that other people want, and to do it at a profit. Wealth, as represented by brick, mortar and machinery, can be divided but, without the incentive that comes from hope for profit and without the managerial excellence that the prospect of adequate returns begets, it is like the human body after the spirit has passed to the great beyond.

To "share" wealth, according to the formula of demagogues, is to destroy wealth, for without creative power wealth is as dead as the idle manufacturing plant or the abandoned farm.

G. L. LACHER
Managing Editor, THE IRON AGE

SHORTERIZING, A New

• • •

By T. W. LIPPERT
The Iron Age, New York

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THE Shorter process, A. E. Shorter's ingenious mechanical adaptation of the hand-operated acetylene torch procedure for obtaining localized hardening, has not only revived the art of flame hardening but shows indications of becoming a firmly entrenched industrial process. Although its use has been largely confined to certain gear-hardening applications in England, it is by no means unknown in this country. In fact, one prominent American concern has been licensed by Shorter for several years and has devoted considerable of its energies to a broadening of the scope of operations and a minimization of the operating difficulties. Although the American licensee has greatly improved the process and already has

a number of installations in operation, it is still felt that additional research should be made before a public announcement is made. This attitude accounts for the dearth of information in the American trade press about this important new development.

In reviewing the mode of operation of Shorterization, one could first consider the most common hardening procedure—the simple furnace heating and bath quenching operation. The more common steels and certain types of iron are heated throughout to above their respective critical points, thereafter to be quenched and drawn. If differential hardening is required, the treater has recourse to chills in a casting or to differential heating prior to quenching for rolled or fabricated parts. This differential heating can be obtained by furnace manipulations or, less commonly, by hand heating with a blowpipe subsequently followed by a quenching. In the latter practice the human element is a major factor and erratic hardness figures

often result, even in the hands of skilled workers.

A few years ago Shorter introduced a mechanically-controlled variation of the familiar hand-operated process, and experimental results were so encouraging that interest was immediately revived. Latterly, a widespread adoption of the procedure by the heat-treating fraternity has become a certainty. The shorter process is essentially a mechanically operated oxy-acetylene blowpipe which traverses the object to be hardened at a pre-

FIG. 2

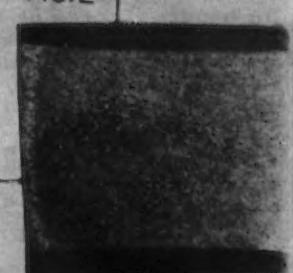


FIG. 3a

FIG. 4

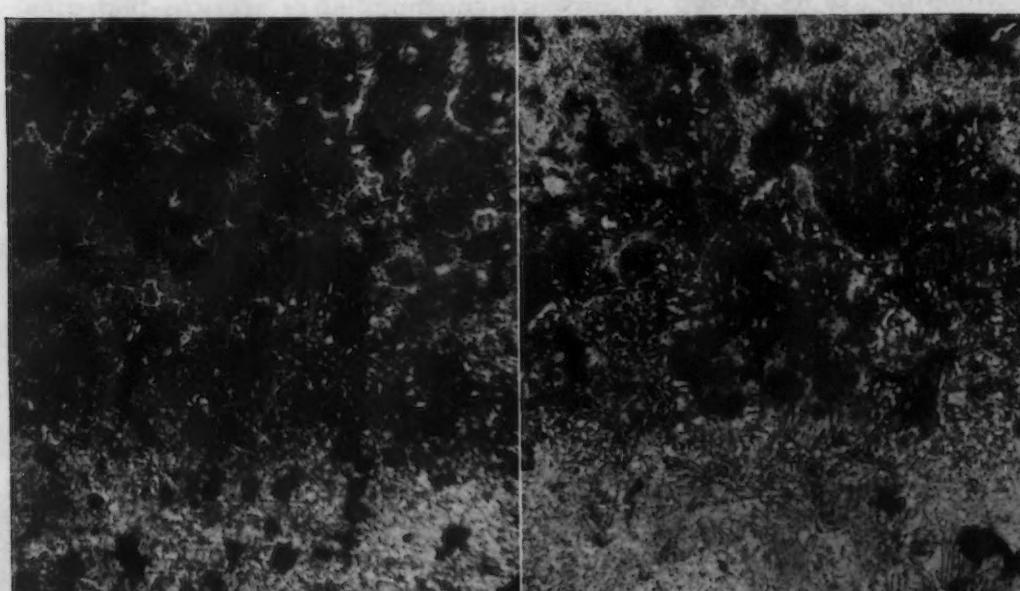


FIG. 1—Depth of hardening in a coarse-structured partly malleableized iron specimen by the Shorter process.

• • •

FIG. 2—Structure of iron from the Shorter hardened surface inward. At 40 diameters (left) and 100 diameters (right). The hardened surface is seen to be essentially martensitic, and then follows a gradual transition through troostomartensite to the unaltered structure. The black nodules are temper carbon.

Old Method of Surface Hardening

Mechanized Process Gains Favor for Treating Alloy and Plain Iron and Steel—High Skin Hardness Obtained

determined speed. Quenching is effected by a coordinate jet of water (or air or, in some cases, nitrogen) which follows immediately behind.

Simple though the set-up appears, there are a number of variables which must be regulated and coordinated to a nicety to assure satisfactory results. A few may be named. The blowpipe must usually be designed for the work at hand, i.e., the width of localized hardening, the shape of the article being treated, the type of steel or iron, etc. A multi-head blowpipe is almost invariably used in order to secure rapid and well-distributed heating. The flame must have constancy and predetermined energy to assure the desired depth of hardness. The distance between the blowpipe and the cooling jet must be determined and set, and the pressure of the cooling jet suitably determined, then maintained at a constant value. These latter variables must also then be tied to the analysis of steel or iron being treated.

Thus, it is evident that each shorter installation calls for indi-

vidual experimentation and control. It is particularly adapted to production problems, where a very large number of identical objects are to be hardened in a given area to a particular depth.

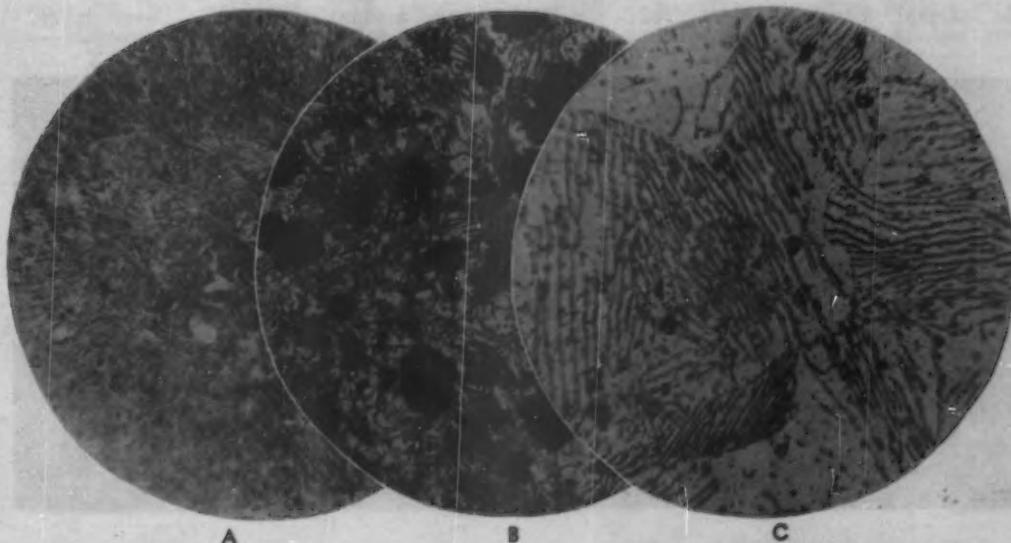
Considering the variables just described as being satisfactorily regulated for particular operations, it is interesting to examine the results obtained in independent plant investigations. This process is by no means limited to gear hardening, for in England it has been applied to a great variety of machined parts, and such parts thereby have shown greatly improved service records. Large quantities of Diesel engine cams have been so treated, as also have been pulleys, track wheels, slides, retort doors and frames, crankshafts, and many other parts. For gears too large for quenching or case hardening, it provides a means whereby a wearing surface of from 450 to 700 diamond Brinell can be obtained. Since parts so treated undergo little or no distortion, it is also valuable for medium-sized work, while for shear wear resistance and general load-carrying

capacity, the process fills a very wide and useful field and rivals the practice of case hardening.

An important gas company in the North of England previously used ordinary pinions in an operation where the abrasive action of coke was very severe. These pinions never lasted more than three months. A flame-hardened pinion, however, has lasted 14 months and is currently in service with little sign of wear. A company in the same district uses an elevator spur wheel which generally was withdrawn from service in four months due to wear. A Shorterized gear has now been in use for 15 months and currently shows little indication of serious wear.

More detailed experimental results are, however, of greater value. First to be considered here will be cast iron. Gray cast iron can be so treated provided that 0.5 to 0.6 per cent of combined carbon is present. Therefore pearlitic cast irons respond to Shorterizing. To obtain a well-hardened surface, however, the iron must be of such a mixture that when a rapid cooling is effected it will respond to it

FIG. 3—(a) View at 570 diameters of the martensitic structure of a flame-hardened iron surface. (b) Normal (unhardened) material. Note the amount and arrangement of pearlite. Taken at 100 diameters. (c) Typical pearlitic area of normal (unhardened) iron prior to its Shorter hardening treatment. Note the coarseness of the structure, to be so resolved at 570 diameters. Prints read left to right.



and harden off. Some types of foundry iron do not readily respond—at any rate, not to a greater depth than, say, 1/64 to 1/32 in., and this depth will give little service; a good chilling iron is also a good Shorterizing iron, and hardened thicknesses up to $\frac{3}{8}$ in. are sometimes obtained.

One iron, hardening to a depth of approximately $\frac{1}{8}$ in. by the Shorter process, has been examined by the British Oxygen Co., Ltd. It should be pointed out that the iron investigated in this case was *incompletely malleabilized iron* and not *ordinary cast iron*. The specimen examined was approximately $\frac{1}{8}$ in. square in section, and an etched view showing the depth of hardening of the two Shorterized surfaces is shown in Fig. 1. This figure is to be considered a "key" for showing locations of micrographs reproduced in Figs. 2, 3(a) and 4.

A sample of drillings from the center of the specimen (away from the Shorter treatment) had the following chemical composition: 0.34 per cent silicon, 0.11 per cent sulphur, 0.043 per cent phosphorus, 0.19 per cent manganese, 0.93 per cent combined carbon and 1.78 per cent graphitic carbon. The Shorterized surface hardness was found to be 488 Brinell, and Scleroscope readings varied between 90 and 100.

This specimen was thoroughly examined under the microscope, and the locations of several of the views are shown in Fig. 1. Fig. 2 was taken at 40 diameters and shows the structure from the hardened surface inward. The Shorterized surface is seen to be essentially martensitic, and then follows a gradual transition through troosto-martensitic structure to the normal unaltered structure.

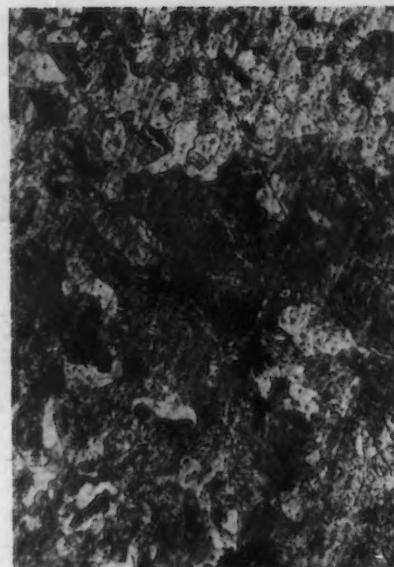


FIG. 4—Structure of the left-hand (see Fig. 1) unhardened edge, showing that the amount of ferrite diminishes further in from the edge toward the center of the specimen, although some pearlite is present with the ferrite at the edge. Taken at 100 diameters.

The black nodules are temper carbon. Fig. 2 also shows the same view at 100 diameters—the same condition exists as shown at 40 diameters. Fig. 3(a) shows the martensitic structure at a magnification of 570 diameters.

Fig. 3(b), at a magnification of 100 diameters, shows the normal (unhardened) material. The variation in the amount of arrangement of pearlite (the combined carbon retaining portion) should be noticed. Fig. 3(c), at a magnification of 570 diameters, shows a typical pearlite area of the normal (unhardened) material. It should be realized that the structure is very coarse to be resolved so well at 570 diameters. Fig. 4 shows the structure at the left-hand unhardened edge (see "key" photograph in Fig. 1); the amount of ferrite

diminishes further in from the edge toward the center of the specimen, although some pearlite is present with the ferrite at the edge. This latter condition, the presence of temper carbon, and the chemical analysis establish this material as partly malleabilized iron.

It is quite probable that the hardened surfaces originally had the same structure as for the section shown in Fig. 4. With this in mind, the high hardness of the Shorterized surfaces is even more remarkable.

Alloy Irons React Favorably

Regarding the applicability of the Shorter process to alloy cast iron, the report of Mond Nickel Co., Ltd., Millbank, London, may be cited. The iron examined by this company analyzed 3.17 per cent total carbon, 1.60 silicon, 1.07 nickel and 0.16 chromium. The combined carbon was determined both in the soft body of the iron and on the hardened surface. The figure found for this in the body of the metal was 0.72 per cent and in the hardened face (after Shorterizing) it was 0.85 per cent of combined carbon.

Hardness determinations were made by the ordinary Brinell method and also by the Vickers diamond hardness machine. By the ordinary method the hardness of the body of the cast iron was found to be 245, whereas the hardness of the hard face was 504. The Vickers diamond hardness of the Shorterized surface was found to be 558, the soft body being 224 to 232. The junction between the two structures showed a uniform increase of hardness up to 557 in the hard layer. An individual reading at 595 was obtained in this hard layer. If these figures are

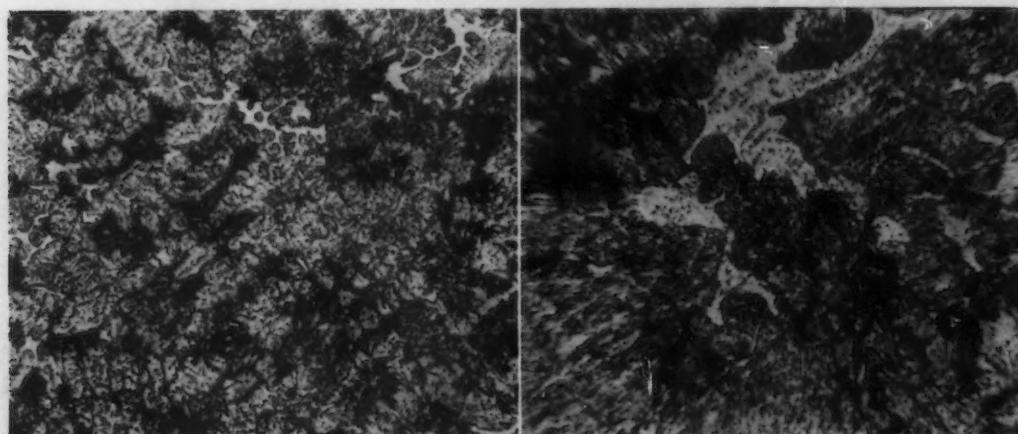


FIG. 6—Normal structure of the alloy cast iron prior to a flame-hardening treatment. The view at the left is at 100 diameters and the one at the right is at 100 diameters.

converted to equivalent Brinell numbers, they will be found to be 230 throughout the soft body—and 500 to 525 in the hardened layer.

Microscopic examination of the specimen showed the body of this particular iron as having a normal pearlitic structure with perhaps rather an excess of phosphide eutectic. There was a very sharp line of demarcation between this structure and the skin structure, the latter showing a matrix of martensite. In this matrix there are patches corresponding with the phosphide eutectic, which shows a structure indicating that incipient fusion has taken place (the phosphide eutectic melts at about 980 deg. C.). The polished section of the hardened portion showed traces of porosity which might possibly again indicate incipient fusion of the phosphide constituent.

There was no indication of surface cracking or of oxide penetration in the hardened skin. Not that surface cracks cannot result if the operator is not careful. But a modicum of skill will cancel this danger. Likewise the surface after treatment is smooth and unaltered in appearance. Thus this flame process is considered superior to the better-known carbon-arc method of heating locally. In the latter method, the surface is sometimes mottled or roughened due to actual melting of portions of the surface.

A. B. Everest, of the Mond Nickel Co., Ltd., has reported to this paper that he is of the opinion that the *Shorter process of surface hardening can be as successfully applied to alloy cast iron as to ordinary cast iron*. In fact, in view of the greater uniformity of the former, Mr. Everest would anticipate improved results by the use of the alloyed iron. Moreover,

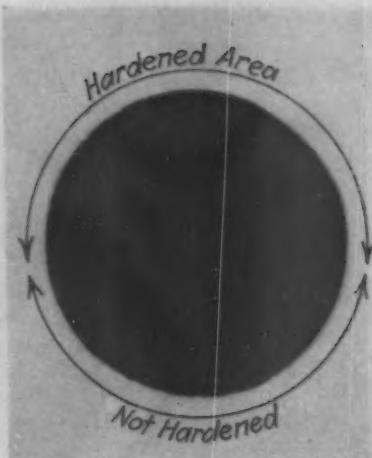


FIG. 5—Alloy cast iron bar 1 1/2 in. in diameter, surface hardened halfway around by means of the Shorter process. This etched view shows the depth of hardening, which measures about 1/16 in. For more detail on the structure of this iron, see Figs. 6 and 7.

with the small amounts of alloy additions which are normally employed in this class of materials, it would be recommended that no alteration should be made in the usual heat treatment.

It should be emphasized, however, that the favorable statements made here concerning Shorterized alloy iron apply only to irons having small quantities of added alloys as commonly used for improving the general quality of iron castings. The remarks do not apply to special irons of the corrosion-resisting or non-magnetic types.

Another alloy cast iron which reacts very favorably to Shorterizing is Mark 3 special die-cast iron made by Stokes Centrifugal Castings Co., Ltd., England. This iron analyzes 2.21 per cent silicon, 0.045 sulphur, 0.74 phosphorus, 0.795 manganese, 1.07 nickel, 0.42 chro-

mium, 0.41 combined carbon and 2.60 graphitic carbon.

In Fig. 5 may be seen an etched section of a bar of this analysis which has been hardened half-way around by the Shorter method. The depth of the hard band in this case is approximately 1/16 in.

A Firth hardometer was employed for hardness measurements, using a diamond indenter under 120 kg. load. The Shorterized surface tested 470 Brinell numbers, whereas the normal hardness of the untreated section was found to be 228 Brinell.

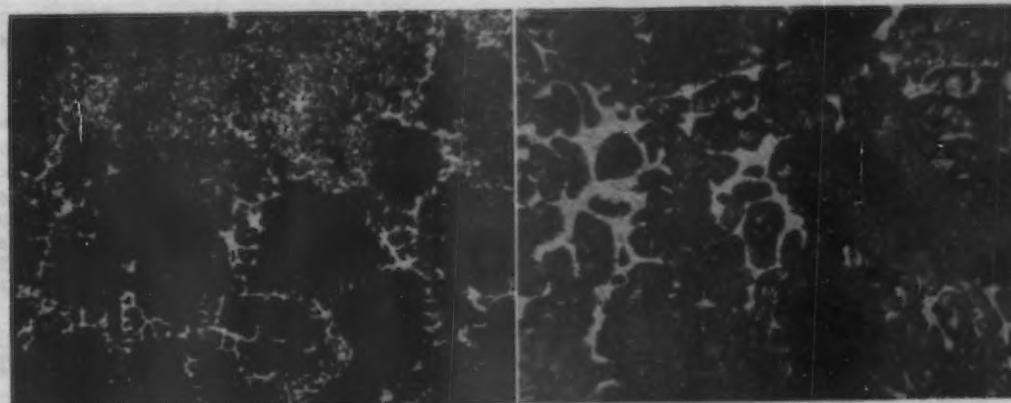
Fig. 6 shows the normal structure of this alloy iron at both high and low magnifications. These two views demonstrate that both the pearlite and graphite are fine and that a network of iron-iron phosphide eutectic exists in certain areas.

One view in Fig. 7 shows the effect of the Shorter treatment from the surface inward—martensitic and troostite-martensitic structures essentially. The iron-iron phosphide eutectic as network is very pronounced in the troostite-martensitic area. The second microphoto in Fig. 7 shows the hardened structure near the surface of the bar.

Normalizing Is of Value

Despite the large degree of hardening which the flame treatment gives this iron, no cracking of any kind was found during a thorough examination. It should be noticed that in the Shorterized section (see Fig. 7, left) the network of iron-iron phosphide eutectic is rather prominent as compared with the hardened structure. A good study for the future would be to ascertain the effect of this structural arrangement, as the iron-

FIG. 7—Structure of a Shorterized section of alloy cast iron. The left-hand view shows the structure from the hardened surface inward; taken at 100 diameters. The right-hand view is that of the hardened surface, taken at 200 diameters.



phosphide is well known to be hard and brittle.

It must be appreciated that when cast iron is hardened the mechanical properties such as tensile and compression values are decreased, and with regard to this it would be interesting to determine how much this effect concerns surface-hardened cast iron. Inasmuch as a tempering treatment at about 300 deg. C. restores and even improves the tensile and compression properties of hardened cast iron without a great loss in hardness, it should be of value to make comparative tests on bars in the surface-hardened condition and similar bars after tempering.

Naturally a lot depends on the use to which a surface-hardened cast iron is to be put. In dealing with iron cast in certain shapes, it could be of value to conduct a normalizing or stabilizing treatment at about 500 to 600 deg. C. with the object of removing or distributing casting or internal stresses before surface hardening is carried out. Of course, it is necessary to adjust the rate of quenching during hardening to suit the analysis of the cast iron being treated.

A normalizing treatment following Shorter surface hardening could be easily incorporated in the flame-quenching set-up. Two blowpipes could be employed, first a hot torch to heat the iron above

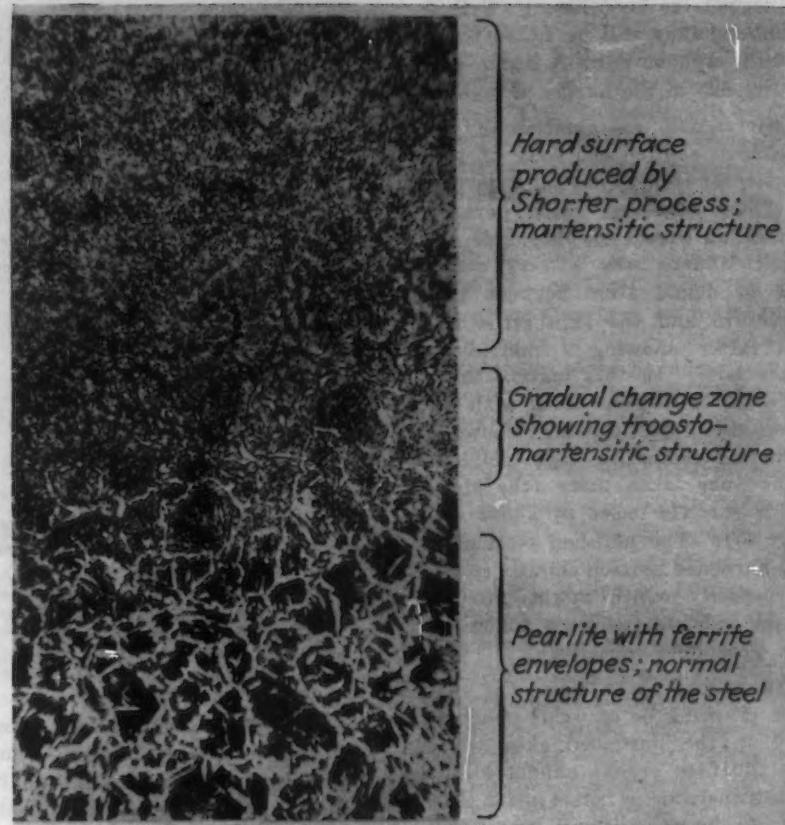


FIG. 8—Showing the effect of a flame-hardening treatment on plain carbon steel. Taken at 50 diameters. The normal structure of the iron is coarse—the steel was originally not in a properly normalized condition.

the critical point, after which the metal is quenched by an air or water jet. Finally a cooler torch would follow to again heat the

surface to a desired tempering temperature, after which the iron can air cool to room temperature.

A number of other alloy irons

TABLE I
Brinell Hardness of Eight Different Mechanite Irons Before and After Shorterizing Treatments

Chemical Composition	Iron No. 1	Iron No. 2	Iron No. 3	Iron No. 4	Iron No. 5	Iron No. 6	Iron No. 7	Iron No. 8
Combined Carbon.....	0.96	0.49	0.49	0.76	0.64	0.74	0.69	2.09
Graphitic Carbon.....	1.92	2.61	2.58	2.35	2.30	2.00	2.08	0.56
Silicon	1.42	1.91	1.92	2.43	1.58	2.26	1.82	1.01
Nickel	Traces	Nil	Nil	Nil	0.07	0.48	0.16	Nil
Chromium	0.11	0.064	0.064	0.022	0.076	0.36	0.10	0.24
Sulphur	0.106	0.105	0.106	0.083	0.114	0.086	0.114	0.123
Phosphorus	0.138	0.465	0.458	0.071	0.077	0.069	0.096	0.073
Manganese	0.722	0.672	0.678	0.890	0.843	0.850	0.915	0.630
<i>Hardness</i>								
Before Shorterizing.....	350	241	235	223	292	269	253	367
After Shorterizing.....	560	472	450	441	450	450	472	518

TABLE II
Brinell Hardness Tests on Eight Different Alloy Cast Irons Before and After Shorter Flame-Hardening

Chemical Composition	Iron No. 1	Iron No. 2	Iron No. 3	Iron No. 4	Iron No. 5	Iron No. 6	Iron No. 7	Iron No. 8
Combined Carbon.....	0.49	0.49	0.96	0.76	0.74	0.69	2.09	0.64
Graphitic Carbon.....	2.61	2.58	1.92	2.35	2.00	2.08	0.56	2.30
Silicon	1.91	1.92	1.42	2.43	2.26	1.82	1.01	1.58
Nickel	0.064	0.064	0.11	0.022	0.36	0.10	0.24	0.076
Chromium	235	241	350	223	269	253	367	292
Before Shorterizing.....	450	472	560	441	450	472	578	450
After Shorterizing.....								

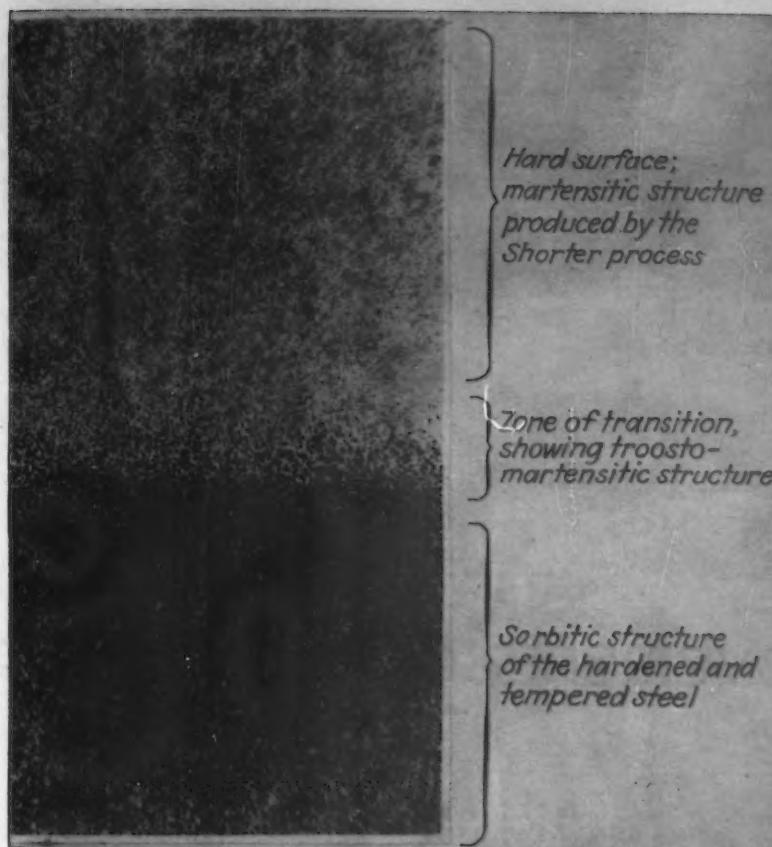


FIG. 9.—Effect of the Shorter process on hardened and tempered alloy steel. This view at 50 diameters shows the change-zone between the as-received sorbitic structure and the hard surface martensite.

readily respond to flame hardening. Eight cast Meehanite alloy-iron bars were Shorterized in the rough condition. After the surfaces were ground for hardness testing, the Brinell numbers shown in Table I were obtained. Note the large increase in hardness in each case. The results obtained with eight other types of alloy cast iron are shown in Table II. The Brinell numbers designated as "after Shorterizing" naturally apply only to the hardened surfaces, as the body or core of the iron is unaffected by the Shorter treatment.

All of the foregoing has applied to plain and alloy cast iron. The Shorter flame-hardening method is just as applicable to carbon and alloy steels. Consider plain carbon steel analyzing 0.18 per cent silicon, 0.038 sulphur, 0.031 phosphorus, 0.68 manganese and 0.48 carbon. This steel finds use in the making of gears, and the teeth of such gears Brinelled only 190 prior to heat treatment. Following a Shorterizing operation, the faces of the gear teeth Brinelled 630. The microphotograph in Fig. 8 shows the normal condition of this

iron, the transition zone and, finally, the structure of the hard surface produced by flame-hardening.

Many alloy steels respond to the Shorterizing treatment as readily as does plain carbon steel. One alloy steel thoroughly tested had a composition of 0.173 per cent silicon, 0.049 sulphur, 0.031 phosphorus, 0.65 manganese, 0.36 carbon, 3.01 nickel, 0.96 chromium, 0.30 molybdenum and 0.02 vanadium. This steel Brinelled 350 in the hardened and tempered (as received) condition. Following a flame-hardening treatment, the surface hardness was raised to 506 Brinell. A micro-photograph showing the transition between the normal and hardened surface may be examined in Fig. 9.

Two Germans, H. Holler and E. Zorn, also have studied the flame-hardening of steel, and reached the conclusion that the most suitable range of carbon content in the steel is 0.4 to 0.6 per cent. Other conclusions were that if the manganese content exceeds 1 per cent, the steel must be handled more carefully than one with, say, 0.5 per cent, and the distance between the blowpipe and the cooling jet must be increased in order to make the quench less drastic. Nickel in the range of 2 to 5 per cent has practically no influence on the hardenability of the steel, but increases the wear resistance. Steels with up to 1 per cent of chromium can be successfully treated by this process; with greater amounts, the metal must be carefully preheated in order to avoid fissures.

Doctor Swinden of the United Steel Cos., Ltd., also has examined numerous plain and alloy steels and has stated that entirely satis-

(CONTINUED ON PAGE 95)

TABLE III
Effect of Shorter Surface Hardening Treatment on Various Alloy Steels

	Type and Composition of the Steel					Vickers Hardness of Shorterized Surface	Nature of Hardened Surface		
	Carbon	Manganese	Nickel	Chromium	Molybdenum		Total Depth Affected in Surface	Depth of Martensite	Depth of Troostite, Etc.
0.4 to 0.5 Carbon.....	0.46	0.69	...	...	...	783	0.128	0.076	0.052
Chromium Steel.....	0.42	0.71	...	1.05	...	782	0.108	0.084	0.024
Tormanc Major.....	0.39	1.59	...	...	0.31	773	0.111	0.092	0.019
Nickel-Chromium.....	0.39	0.56	1.52	1.16	...	770	0.108	0.080	0.028
Chrome-Molybdenum.....	0.36	0.60	...	1.13	0.31	726	0.108	0.096	0.012
3 1/2 per cent Nickel.....	0.36	0.70	3.34	0.20	...	710	0.123	0.086	0.037
Nickel-Chromium-Molybdenum.....	0.32	0.56	2.56	0.72	0.42	650	0.135	0.120	0.014

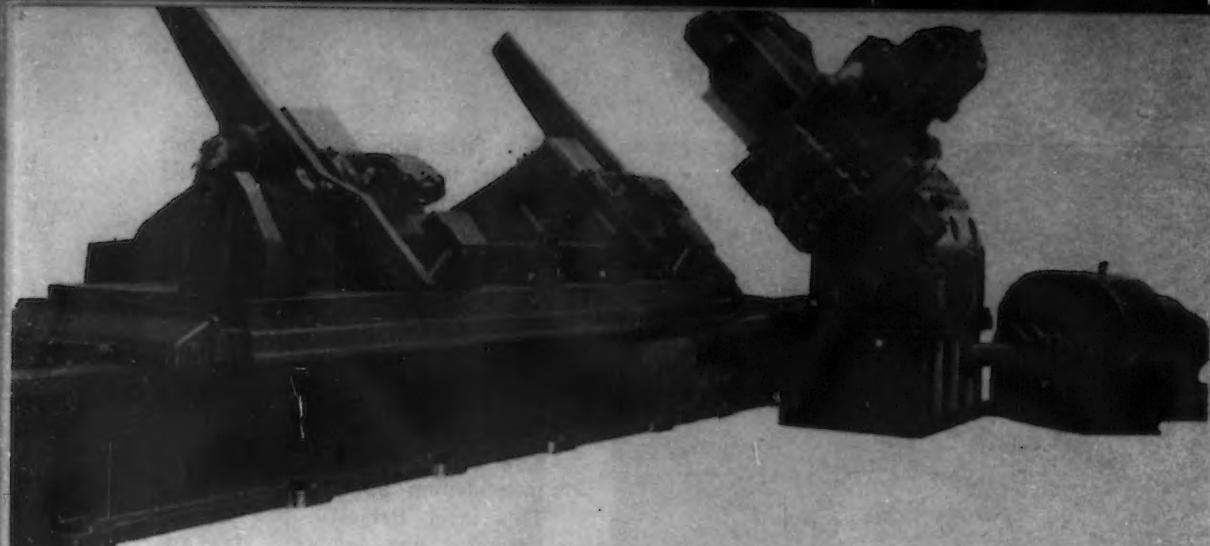


FIG. 1—Billet gouger on erecting floor.

All Movements of Billet Gouger

By M. M. McCALL



THE removal of seams and other defects from the surfaces of steel billets to properly condition them for the subsequent rolling operations is a subject of importance to all manufacturers of rolled steel products.

While hand chipping with pneumatic tools is widely used on billets of small cross section, the larger billets are now successfully and economically deseamed by mechanical means.

To compete with the hand method, a machine must not only be built with a highly sensitive control, but must, in addition, have means for quick and easy loading, clamping, unclamping, rolling over and ejecting of the billets.

The Niles Tool Works Co. has recently built a new billet gouger designed to meet all of these requirements. Fig. 1 shows the machine on the erecting floor and Figs. 2 and 3 show it after installation in a large steel mill. The machine has many improvements

over previous units of Putnam design, which have been in use in many mills for a number of years, and will handle billets 5 to 12 in. sq., 5½ to 18 ft. long. Other machines have been built for billets of larger section and of greater length.

The billet is held so that the surface being conditioned is inclined at an angle of 45 deg. This permits the operator readily to view

the surface while seated in his position, and also aids in the disposal of chips.

The housing of the machine is a massive casting tongued and grooved to an integral extension of the bed. On its upper portion, ways are planed for the tool-slide saddle at an angle of 45 deg. The tool slide is arranged with two tool holders in separate clapper boxes. One tool has a flat face for stripping and the other has a rounded edge for gouging seams. These tools are spaced so that either one may be used across the entire face of the largest billet without interference from the other. To bring either tool into cutting position, it is merely necessary to traverse the tool-slide saddle an amount equal to the distance between the two tools. The ways on the housing where the saddle slides, and the ways on the tool-slide saddle where the tool slide slides, are lined with renewable hardened steel plates. Bronze plates are attached to the mating surfaces on the sliding parts.

Separate motors geared directly to nitrided screws provide movement of the tool-slide saddle along the housing ways and the movement of the tool slide transversely across the tool-slide saddle. Control handles in each of the opera-

CONSTRUCTION and operating details of an improved machine for removing seams and other defects from the surfaces of steel billets of the larger sizes are given in this article. One operator seated at the head end can load, clamp, turn over, deseam, unclamp and eject the billet from the machine without moving from his seat. He controls the table movements with his feet and tool movements with his hands. An inspector stationed beside him marks the defects as the surface to be worked on passes by.

tor's hands start and stop these motors and select the direction of rotation.

The table is driven by a 75 hp. planer-type, reversing, adjustable-speed motor, through a reducing gear unit and a helical bronze pinion meshing with a forged steel rack. This type of drive, which is similar to that used on worm-driven planers, is particularly advantageous, inasmuch as it permits use of heavy and frequent ribs in

The table slides on two flat tracks with flanges cast on their sides which form troughs for the table lubricating oil. Each way of the bed is protected by a specially treated canvas belt, which extends the full length of the bed and passes through suitable cored openings in the table. The belts lie flat on the flanges adjacent to the tracks and by suitable flanged rollers are guided through the table. Springs at each end of the belts

by bolts engaging clamp members carried in tee slots in the table and also by stop pins.

Two torque motors, fitted with electric load brakes, are ceiling mounted on the underside of the chucking and manipulating members, and are electrically synchronized. In the transmission of power, a spline shaft extending along the back of the table is employed so that the manipulating arms will operate in perfect unison. Power

Controlled By Seated Operator

the bed where the loads are heaviest.

The table movement is controlled by the operator's feet on a double or walking-beam type of foot treadle. Pressure from his right foot causes the table to move in the cut direction and pressure from his left foot moves the table in the reverse direction. Removing both feet from the treadle stops the table. The amount of foot movement determines the speed of the table.

keep them taut for all positions of the table. The tracks on the bed are lined with renewable hardened steel plates, and the mating surfaces on the table are lined with bronze plates. Holddown clamps on each side of the bed prevent the table from lifting when heavy cuts are being taken.

Two chucking and manipulating units are arranged so that they may be located advantageously for the particular length of billets to be handled. They are held in place

from the spline shaft passes through two pairs of worms and wheels and a pair of pinions and racks attached to a slide member carrying the gripping jaws.

The racks attached to the gripping jaws extend and mesh with other rack pinions attached to the manipulating arms. The upper pinion, visible in Figs. 1 and 4, is attached to the manipulating arm. The arms are caused to make the necessary angular movement to

(CONTINUED ON PAGE 36)

FIG. 2—Installation view showing loading platform and mechanical billet pusher. The discharge skids are in the foreground. The index members for turning the billets are attached to the loading platform.



Tungsten Cemented Carbide Tools

A STATEMENT of observations by operating executives at the plant of one of the foremost instrument makers where Carboloy tools have been increasingly used.

• • •

INCLUDED in the engineering values ascribed to tungsten cemented carbide tools for metal finishing is a value somewhat guarded by users and which has a direct relation to use on small lots of work requiring extreme accuracy in an assembled product.

The ability of cemented carbide

tips, and tools of formed shapes, to retain "keen" cutting edges, more and more calls for their use where tool-security, from a keen edge viewpoint, is highly important. This because experience has taught that maintained accuracy on this class of work involves non-removal of tools from the time a job is set up until it is completed as to total quantity.

"Keen-edge," as a factor of tool-security, can be specified as a sharp edge which is free from any evidence of irregularities when checked under a glass.

The tools referred to particularly meet this requirement under stated conditions, in that their cut-

ting edges may be sufficiently maintained in operation, on this class of work, by stoning rather than by grinding and sharpening. This maintained condition can be held without tool removal from holder and the resultant disturbance of "set-up."

It must not, however, be concluded that tungsten cemented carbide tools are a "cure-all" for all metal cutting inaccuracies. Yet it is well established that the material presents a means for accomplishment of desired results, if and when planned avoidance of every type of tool abuse is incorporated in a tool-handling system which is properly supervised in its execution. The system must include every tool-handling and use, both within and without the tool crib. Tool sharpening by a thoroughly informed employee, one only if possible, is an important safeguard.

Under such planned attention, a tungsten cemented carbide tool will hold its size and shape and be in good condition to perform in a requirement-meeting manner.

The engineering theory in back of this shop practice is—give a tool something definite to do and be sure that it is so treated that it will fail only under an unknown condition. Any application of a lesser theory will tend to prove that these modern tools are an expensive luxury rather than a profitable investment.

Used for Aluminum

Today, in aeroplane accessories and in other precision devices, as well as in the manufacture of many delicate measuring and timing mechanisms, aluminum, in both drawn and cast forms, is being increasingly employed. This type of production is seldom in large quantities but cutting edge difficulties

Accurate Hole Boring with Tungsten Cemented Carbide Tool.



Tools and Their Relation to Small-Lot Work

persist because of a silicon content in the metal. Here the maintaining of a keen cutting edge is difficult and of no less importance, while surface speed, because of irregular shapes or forces created when in motion, may be of either major or minor importance. In other words, speed may be utilized or sacrificed in deference to cutting edge maintenance.

In any work of this class much depends upon tool shape and tool mounting. Rigidity, in the train of machine elements in back of the tool, is essential. Clearance angles must be such as to take from the cutting-tool edge as little of its support as is possible. The employment of 1200 ft. per min. is not overlooked in gaining a 0.0005 in. accuracy in round or irregular shaped parts and the same condition may prevail in the milling of flats. This speed is in connection with the elimination of subsequent work grinding operations. The necessity for a particular rate of speed is nil, while cutting-edge security is vital. Producers of the class of work under consideration are after tool security. The answer to tool security is always—How often is it necessary to grind? Given proper machines, often with special design features, plus tool security, it is quite possible to get the accurate results required for instrument work on a manufacturing basis.

In one-man tool grinding, such as is considered best on this class of work, there is one rule from which it is said there should be no deviation—The grinding wheel should never lose its contact with the tool until the final stroke or pass of the wheel. It should not clear the tool at any point before the grinding work on the tool is completely finished. Otherwise, tool disturbance reflects at the cutting edge of the tool.

Engineering knowledge, within the organization which is to use the tool, is essential. Such knowledge cannot be bought from the seller except as to basic facts. This statement casts no reflection upon the present method of tool distribution but, rather, indicates that the use of cemented carbide tools is in its infancy and that until certain definite ground is reached, profitable use must be based upon detailed engineering knowledge of material and cutting-tool action under specific conditions which set the limit of profitable use within a shop. Such limitations are largely determined by both organ-

ization provision for proper tool care, and by employee ability to make profitable use of such provision. Back of these must be right machine design. Obviously, the development of these proper shop conditions is a matter of supervision and not one of a seller's contract obligation. Nor should any prospective user expect that the seller will supply him with anything other than fundamental information, gained during the relatively short period of time that the material has been in use. In connection with the material there is a most useful field in accurate small-lot production.

Using Tungsten Cemented Carbide Tools for the Milling of Accurate Flat Surfaces.



Plastics Industry

Broadens Its Field

By F. L. PRENTISS

*Cleveland Resident Editor,
The Iron Age*

MANUFACTURERS of molded plastic products, of which the General Industries Co., Elyria, Ohio, is one of the largest, are improving their technique and broadening their range of output. An example of the trend toward larger products is a cash register drawer, made by the Elyria company, which measures $14\frac{1}{2} \times 15$ in.

Although plastics are competitive with iron and steel, their manufacture calls for considerable steel, as well as machinery. A new market for equipment has been opened up by the perfection of an extrusion method of molding thermal plastic material in which the hot plastic compound will be forced into dies.



THE plastic molding industry is continually seeking to broaden its markets by developing new applications for its products. Recent activities in that direction

are centered to a considerable extent on making much larger plastic products than heretofore have been produced. In addition, plastic molding products recently have become competitors of glass for use

in lighting fixtures and to some extent as interior trim in building construction.

Lenses for dome lights for at least one make of automobile are now being made of plastic material, which also has replaced glass in lighting fixtures on some railroad cars. Production of large globes of plastic material for dome lighting fixtures is the latest development in this particular field. Molding of these necessitates an open top but otherwise the design does not differ from that of glass globes. It is claimed that as much light will pass through a lighting fixture globe made of white plastic in thin sections as through white glass and the light weight of the former as compared with glass is highly advantageous.

A change appears imminent in



A group of 350-ton semi-automatic hydraulic presses in which the pre-formed molds are pressed to their final shape and then baked.

the method of molding plastics which promises to revolutionize production methods in this industry, which at present is following practices that have been pretty well standardized. This is promised by the development of an extrusion method of molding thermal plastic material under which the hot plastic compound will be forced into dies, the method being virtually similar to that of making die castings. A press manufacturer has developed a machine for this extrusion process, orders for which have been placed by several makers of plastic products and some of these machines will be placed in operation shortly.

Cash Register Drawer Made of Plastic

Among the largest manufacturers of plastic products is the General Industries Co., Elyria, Ohio, which has one of the best equipped plants for molding plastics and is one of the leaders in developments in that field.

An interesting example of a large plastic recently made by this company is a drawer for a cash register $14\frac{1}{2}$ x 15 in. in dimensions and 2 $\frac{1}{2}$ in. deep. The lower half of the steel mold required for making this drawer weighs 1000 lb. and a pressure of 350 tons is used in molding the drawer. A housing for a meat chopper is another large part that is to be made of plastic material.

During 1934, when other industries were lagging, the Elyria company put in \$75,000 worth of new machinery equipment.

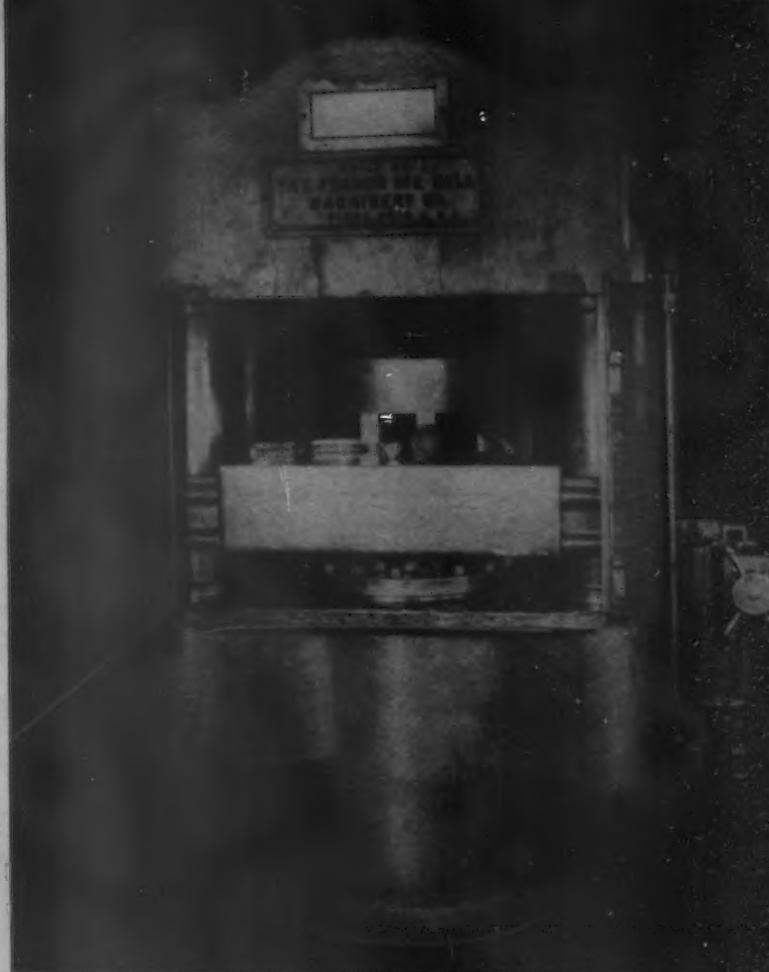
Large Variety of Molded Parts Made

A large variety of molded products are made in the plant ranging in size from pieces $\frac{1}{4}$ in. long x $\frac{3}{8}$ in. in diameter to the cash register drawer, which is one of the largest molded parts that has so far been made. Molds are made with a single cavity for large pieces up to 100 cavities for the smaller.

Three grades of molding materials purchased in the open market are used. These are Tenite, a cellulose acetate material, Bakelite and Durez, which are phenolic molding compounds, and Plaskon and Beetle, both urea materials.

Molded products are held to the usual commercial tolerances of plus or minus 0.005 in., but much closer

MOLDS are made by the hobbing process when the quantity of parts to be molded warrants the making of molds in this way. Under the pressure of a 1000-ton hydraulic press a hardened steel hob is forced into the blank, producing the die cavity that is then machined, hardened and highly polished. The metal screen on the hobbing press is to protect the operators should the hob break while being pressed into the die blank.



limits are maintained if the customer requires it. Work is being produced with a wall thickness as thin as $1/32$ in. Very intricate parts are produced for mechanical purposes. A thermostat valve housing with both internal and external threads is an interesting example.

The plastic molding industry has created a valuable market for the makers of machinery iron and steel. In addition to press and other mechanical equipment used in plastic molding, the Elyria plant has a tool and die department equipped with a large amount of machinery and also uses a great deal of light machinery in its finishing department, mostly for removing fins from the work. The smooth, lustrous finish of the molded parts requires very accurate and finely finished molds, and die makers are especially trained for that class of work.

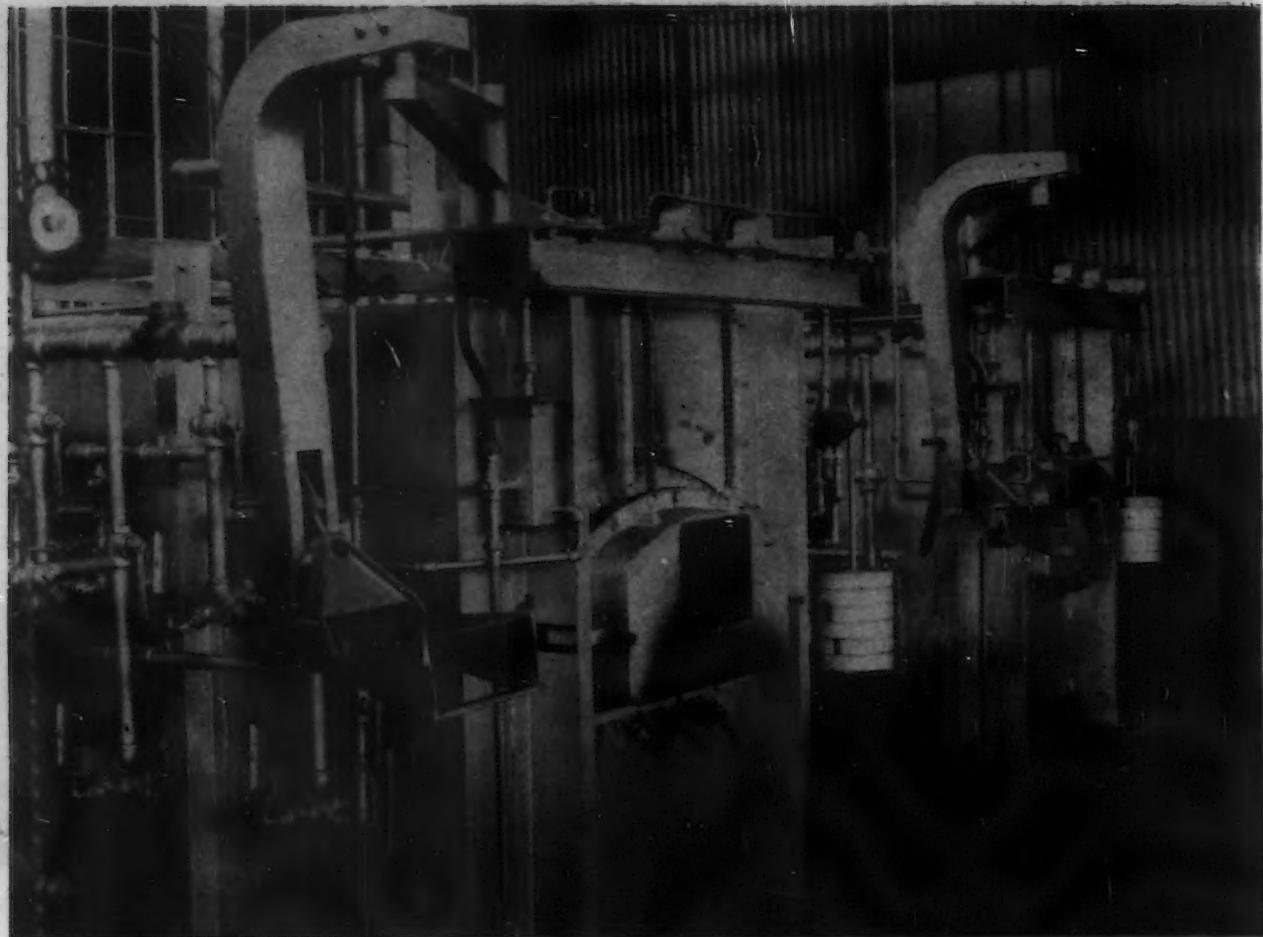
Molds are made by the hobbing process when the production of a piece is sufficiently large to warrant the use of that method. A hob that is a duplicate of the object to be molded is machined from special tool steel, which is hardened after machining, and this serves as a master die for making

duplicate molds. The use of a hob when once made assures the accuracy of all the molds or dies made with a hob, as errors due to the human element in machining mold cavities are avoided. The hobs are stored so that in case of accidents to the molds they may be used for making new molds.

The cavity in the mold is formed on a hydraulic press of 1000-ton capacity rated with a 100 per cent over-load, and a pressure of 1500 tons is frequently exerted in pressing the hob into the blank to produce the die. The blanks are made of low-carbon machine steel. For dies that are machined instead of hobbed an oil-hardened machine steel is used.

For the hobbing operation the blank is placed in a heavy ring 2 ft. in diameter and about 8 in. thick to prevent the metal from spreading out under the powerful pressure of the hob. When oval or semi-circular blanks are used to make molds, spacers are inserted to fill the space between the blank and inner circumference of the large ring.

The cavity, after being formed by hobbing, is machined to over-all
(CONTINUED ON PAGE 43)



BATCH-TYPE gas carburizing furnaces are used at the Electric Auto-Lite plant to carburize clutch pinions, clutch bodies and clutch housings. Clutch bodies are given a case depth of 0.028 in.

Steel Parts Are Carburized By Eutectrol Process

MUCH time, money and thought have been spent in devising cheaper, quicker and better ways of carburizing steel parts. A number of methods have been evolved. One of the best employs a retort or muffle with gas as a carburizing medium. Sometimes city gas is used. The Electric Auto-Lite Co., Toledo, Ohio, however, utilizes a combination of raw natural gas and city gas that has been reformed, and with great success.

Electric Auto-Lite is the second largest maker of automobile starting and lighting equipment. Its main plant in Toledo is housed in

a huge building. So many parts call for special metallurgical and physical properties that a separate heat-treating division is necessary. Among the furnaces of special note in this division are the batch-type gas carburizers. These furnaces, of which there are three, eliminate the packing of parts in carburizing material, as they are of the full muffle type and employ a gaseous medium. Using a method known as the Eutectrol process, they were developed and built by the Surface Combustion Corp., Toledo. The work carburized consists primarily of clutch pinions, clutch bodies and clutch housings.

Clutch bodies are made from S.A.E. 4620 steel, weigh 6 oz. each and are given a case depth of 0.028 in. To produce this case they are heated to and held at 1700 deg. F. for 4½ hr. while being subjected to a predetermined atmosphere gas cycle. This cycle consists of (1) DX (reformed gas) flowing through the muffle at a rate of 35 cu. ft. per hr. for a definite time, (2) natural gas at 80 cu. ft. per hr. for a definite time, and (3) both DX and natural gas at the same rates for the balance of the cycle. The rate of carbon penetration, at 1700 deg. F., is 0.012 in. per hr. (CONTINUED ON PAGE 48)

Coating Strip with Copper Lead For Ford Rod Bearings

In the manufacture of copper-lead bearings for connecting rods of V-eight cars, the Ford Motor Co. uses a process by which copper-lead is cast continuously on a steel strip, which in turn is formed in a half circle and machined to bearing size. This work, at the rate of 5500 bearings a day, is done at the Rouge plant at Dearborn, Mich.

Due to the design of the Ford connecting rod bearing, it is desirable to have a steel back or support for whatever bearing material is used. Low carbon cold-rolled strip steel, 0.068 in. thick and 2 1/16 in. wide, is first channeled to make flanges for bearings, an ordinary rolling machine being used for this operation. After being flanged, the steel strip is 1.886 in. in width.

The steel strip is passed down through a copper-lead bath in a coating furnace and held at a temperature of 2100 deg. F. in a 32 per cent chrome metal coating pot, the heat zone being 10 in. long. The strip is in this zone one min. Hydrogen gas diffuses up through the coating furnace and deoxidizes the steel strip in the zone just before it enters the copper-lead bath. As the clean steel strip moves through the bath into the graphite die, the copper in the copper-lead mixture brazes onto the steel.

The upper part of the graphite die is at 2100 deg. and is held in the bottom of the chrome pot directly under the copper-lead bath, so that the die allows a certain amount of copper-lead to pass along with the steel strip. The opening in the die is to the size desired in the rough coated strip. The steel, of course, is coated with copper-lead to the size and shape of the opening in the die.

As the steel strip, now sur-

rounded by hot copper-lead, goes through the graphite die, the cold end of the die, which is cooled by a water jacket, causes the copper-lead to freeze and become solid, thus holding back the hot metal from above. The coated steel, after coming out of the cold end of the die, passes through friction-pulling rolls and is ready to be cut to length.

The copper-lead mixture is of the following analysis:

Lead	30.00-35.00	Per Cent
Copper	63.00-68.00	Per Cent
Iron	0.50	Per Cent maximum
Nickel	1.00-1.50	Per Cent

The coating furnace has an outer steel shell $\frac{3}{4}$ in. thick, with loose silicel refractory material between the shell and the molybde-

(CONTINUED ON PAGE 47)

STEEL strip is passed down through copper-lead bath in a coating furnace and held at temperature of 2100 deg. F. in a 32 per cent chrome metal coating pot. Below the bath is a graphite die through which the steel, coated with copper-lead, moves. The coated steel then passes down through friction-pulling rolls and is ready to cut to length.



Machine Tool Exports

By C. J. STILWELL

*Vice-President, The Warner & Swasey
Co., Cleveland; President, National
Machine Tool Builders' Association*

In the days before the World War, American exports of machine tools represented a very high share of the business of the industry. At one time, for instance, 60 per cent of the business of our own company came from abroad.

A quarter century later the proportion of the industry's production which went abroad was substantially less. The volume, however, was still large in terms of dollars. During the 1926-30 period, exports of industrial machinery, as reported by the Department of Commerce, averaged \$216,000,000 annually.

Then came the depression—and machine tool exports dropped to \$55,248,000 in 1933.

It was hoped that with the gradual world-wide revival of business a substantial increase in machine tool exports would result. But such increase has not materialized to any satisfactory extent. It is true that in 1934 exports of industrial machinery rose to \$98,349,000—but by comparison with the former experience of the industry, this amount seems small indeed.

On the whole, machine tool exports have been on the decline for a long time—and recently, as business abroad has revived, new developments have arisen which are making it increasingly difficult for American machine tool builders to compete in foreign markets.

In the face of these facts, it is only natural that we hear expressed in some quarters the idea that American machine tool builders may as well resign themselves to the inevitable and give up the

hope that at some future time they may again revive machine tool exports to something approaching former levels.

I do not subscribe to this idea. Admitting all the difficulties now attendant upon the building up of foreign trade for machine tools, I do not believe that the industry can afford for a moment to entertain the thought of giving up foreign markets.

Those who are pessimistic with respect to export trade would do well to remember that, with the depression, domestic sales as well as foreign sales hit the toboggan—that even in the face of present disadvantages, exports from 1931 through 1934 have constituted approximately 29 per cent of the business of American machine tool builders—and that the largest 1934 increases in industrial machinery exports were made in the power-driven, metal-working machinery group composed almost exclusively of machine tools.

In my opinion, export trade is an inherent and integral part of the American machine tool business and absolutely necessary for the life and progress of the industry. Certainly, the industry cannot merely sit back and let foreign markets slip away without a struggle.

The proper course of action, it seems to me, is to analyze the facts, determine the obstacles to be overcome, and decide what steps, if any, may be taken toward regaining foreign trade, insofar as that may be possible in the light of changed circumstances of today.

To understand the present situation, it is necessary to review

briefly the course of machine tool exports during the past 20 years.

The natural peak of machine tool exports was reached in 1912 and 1913. The period was one of industrial expansion in Europe, and the large demand for American tools arose because machine tools of American make were vastly superior to European in construction, design and productivity.

Then the war came, and still further added to the already large demand. But the war also began to teach the British and the Germans how to make better machine tools.

Previous to that time few European manufacturers had made machine tools in quantities. In March of 1914, for instance, an English plant asked our company to figure on machines and tools for making 10,000 carburetors. After the figure was handed in, we were informed that the company had changed its mind—that it was not going ahead with the proposition because "the quantity was too large!" The war started on Aug. 4 of that year. By fall this firm had orders for 4,000,000 fuses, and wanted all the machine tools they could get.

This illustrates the manner in which the war launched European manufacturers into quantity production. Before the war was over, it was an old story. Facilities were immensely enlarged, especially in England and Germany.

After the war, they naturally had to occupy these increased facilities. The vast number of machine tools which America had shipped were now released for normal industrial purposes. At the same time wages and prices in the United States were rising. As a result, exports of machine tools from the United States declined to a very low point.

Business Too Good to Worry About Exports

Coincident with this decline of foreign demand there came the 1919 boom in this country. The result was that many American manufacturers for the time being disregarded foreign markets and discontinued active solicitation of machine tool orders abroad. Re-sale agencies which had been established before the war had in many cases become totally disrupted.

Meanwhile German and British machine tool builders took advantage of their lower wage rates, material costs and overhead, improved their own distribution

(CONTINUED ON PAGE 48)

LIGHTNING STRUCK THIS PLANT ... and saved the business.

ON the following pages, we present an innovation in industrial journalism.

This takes the form of a romance of modernization but is unique in that the story is but partially presented.

We have written the music, so to speak, in the form of pictures. We want you to supply the words.

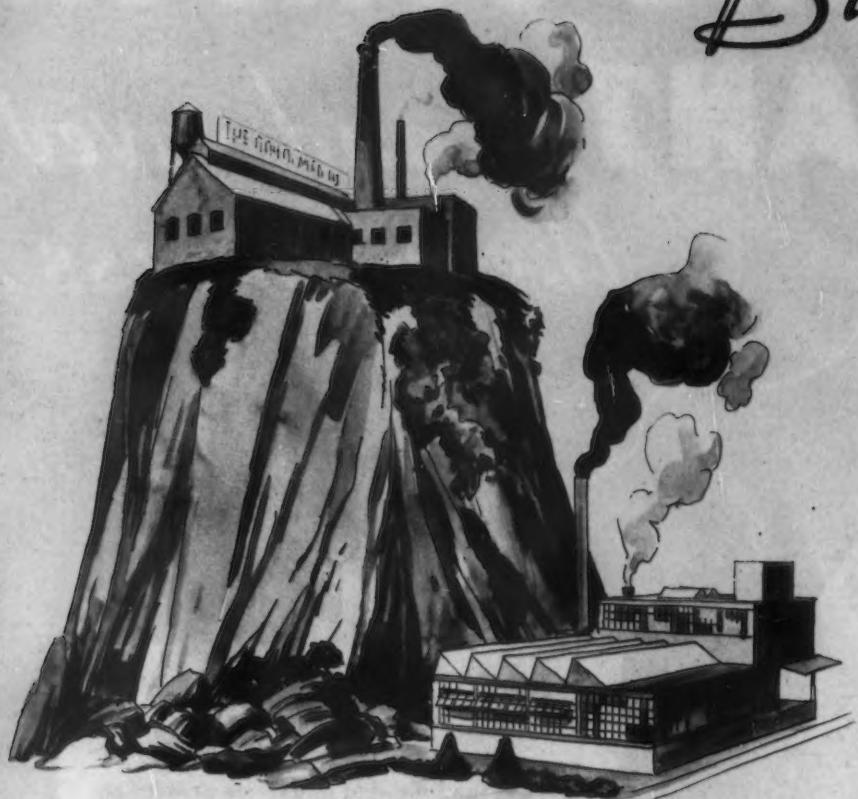
THE IRON AGE offers the prospective authors awards aggregating \$575 for the best five texts submitted. Complete details on the last page of this insert.

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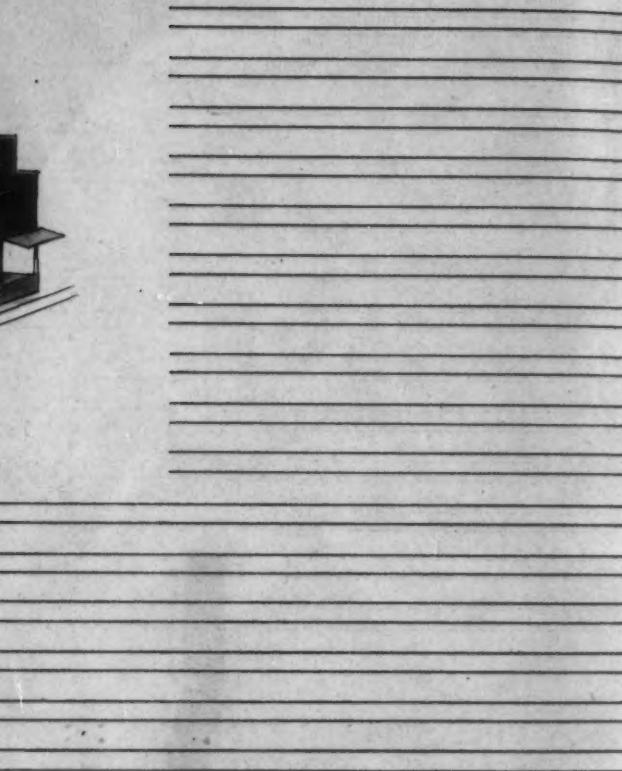
Fifth in a series of pictorial visualizations of the economics of mechanization, presented by THE IRON AGE.

HARRY JOHNSON

But most of us
can't afford
to wait for
LIGHTNING



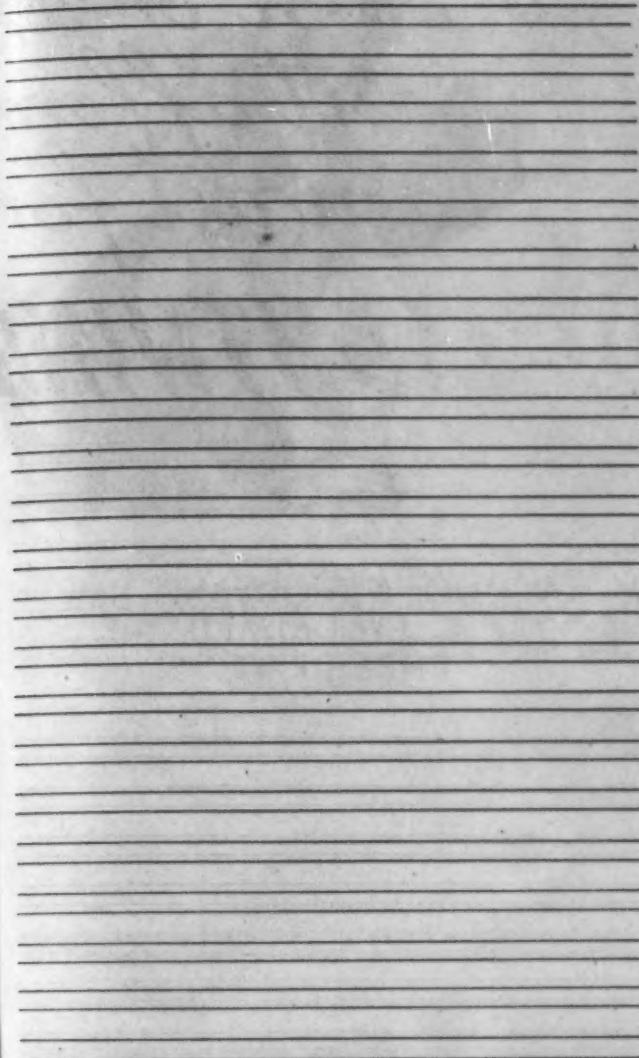
IT WAS AN OLD ESTABLISHED CONCERN, BUT IT WAS ON A HIGH COST LEVEL.



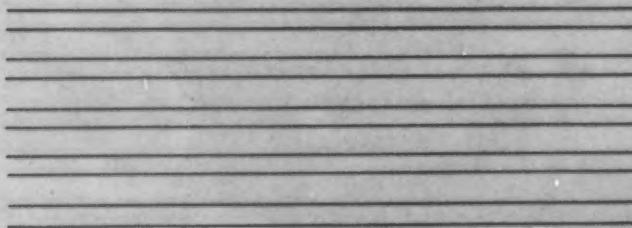
"HOW CAN YOU
AFFORD TO BUY ALL
THESE NEW TOOLS?"

"THEY DO NOT COST ME ANYTHING, MY COMPETITOR ON THE HILL PAYS FOR THEM."

s
d
or
G



LIGHTNING STRUCK THE
PLANT AND ALL THAT REMAIN-
ED OF IT WAS A MESS OF
SCRAP IRON AND A MASS OF
SMOULDERING EMBERS.



A DIRECTORS' MEETING
WAS HELD, FOR WANT
OF BETTER QUARTERS,
IN A SAMPLE ROOM OF
THE GRAND HOTEL.



COST ME
COMPETI-
TORS FOR



"LET'S GO OUT OF BUSINESS,"
SAID DIRECTOR PINCHPENNY.



"NO, NO, A THOUSAND TIMES
NO!" EXCLAIMED THE
PRESIDENT.



"I PROPOSE,"
SAID THE
GENERAL
MANAGER,
"THAT WE GET
THE OPINIONS
OF OUR STAFF
MEMBERS."



SAID THE SUPERINTENDENT:
"MOST OF OUR MACHINERY WAS
READY FOR THE SCRAP HEAP
ANYWAY."



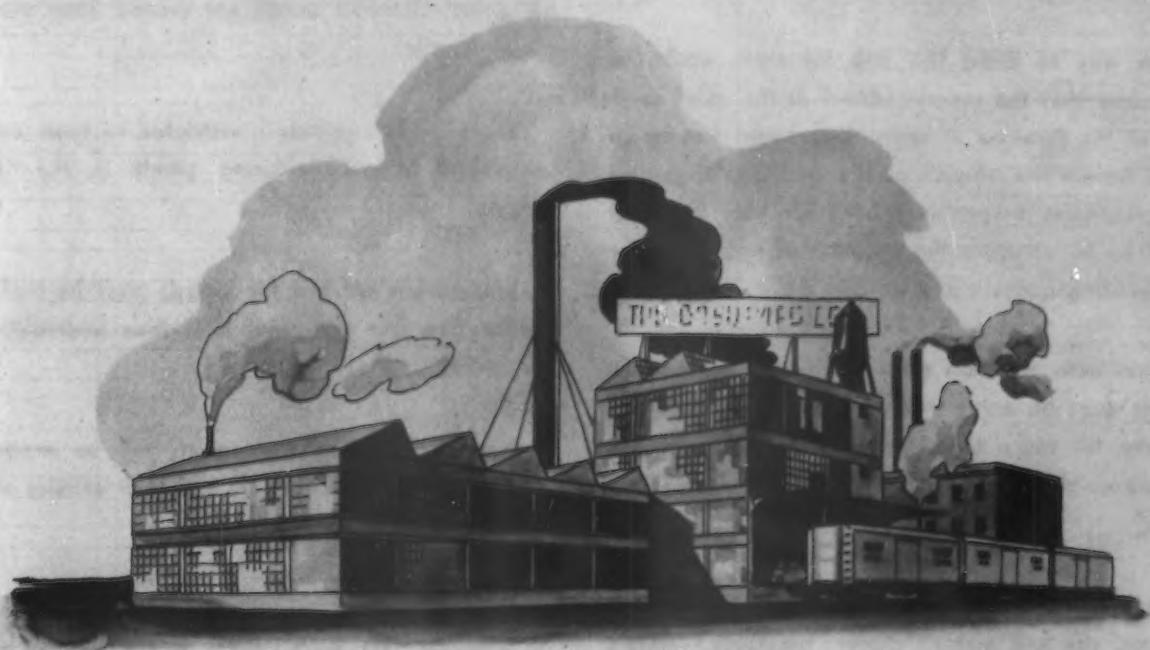
SAID THE SALES MANAGER: "WE HAVE BEEN EUCHRED OUT OF THE OPPORTUNITY TO MAKE MANY PROFITABLE NEW PRODUCTS BECAUSE OUR EQUIPMENT WOULD NOT ATTAIN THE NECESSARY ACCURACY LIMITS."



"SAID THE MASTER MECHANIC:
"IF YOU GENTS HAD ONLY HAD
THE JOB OF KEEPING THEM
OLD WRECKS RUNNING---"



A STEADY STREAM OF TOOL AND EQUIPMENT
ENGINEERS SUBMITTED ESTIMATES OF
PRODUCTION AND COSTS.



OUT OF THE ASHES OF THE OLD PLANT ROSE A NEW ONE,
READY TO MEET ALL COMERS ON A ROCK BOTTOM
COST LEVEL.

The Iron Age Offers \$575 in Prizes!



If you are conversant with the cost cutting and quality improving powers of the new machine tools available today, a story will have suggested itself to you as you have examined the preceding pages.

Write it down. Let's see how convincing a case you can make for the benefits of modernization.

Do not feel that it is necessary to adhere strictly to our pictures and captions. You may have better ideas and they will be welcome.

Of course, you will not try to write detailed specifications for the reequipment of the entire plant. That would not be feasible. But please note that the story must include at least one specific example of what could be accomplished in the way of cost savings or quality improvement in connection with some stated process, product or operation, through the installation of one or more of the modern machine tools such as will be exhibited at Cleveland.

One way to bring this into the story would be to assume that the superintendent or the chief engineer or the foreman of some department was to be called before the officials of the company to outline a replacement proposition. Another way to do it would be to introduce the engineer of some machine tool building concern and let him do it.

In any case, the data given relating to prospective savings must be actual and not imaginary. This will be easy, for you will be studying just such cases and such possibilities during your visit to the Machine Tool Show.

Machines supposedly selected should be identified by type, size and maker's name. Machines replaced should be identified by type, size and age, with makers' names omitted.

Prizes

Award No. 1	\$200
Award No. 2	150
Award No. 3	100
Award No. 4	75
Award No. 5	50

Awards will be made to contributors upon the basis of effectiveness in presenting convincing arguments for machine tool modernization and for human interest of text. In case of a tie, each tying contestant will be given the full amount of the award in question.

The editor and staff of THE IRON AGE will be the sole judges of the merits of the articles submitted.

• • •

CONDITIONS

MANUSCRIPTS should not exceed 3000 words in length.

Eligibility to compete is restricted to those actively employed in manufacturing plants in the United States.

Manuscripts entered for awards must be mailed to Editor, The Iron Age, not later than midnight, Oct. 12, 1935.

Names of winning contestants will be announced in The Iron Age of Nov. 7, and their articles will be published in subsequent issues.

THE IRON AGE reserves the right to publish also, in whole or part, such papers as are deemed worthy of honorable mention, paying for them at the regular contribution rates.

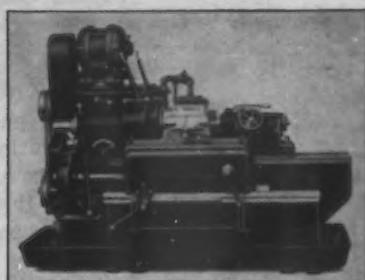
What profit has



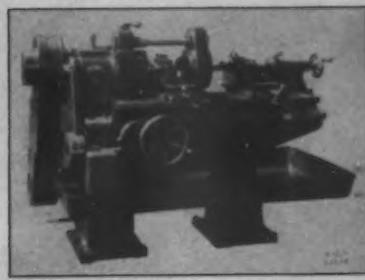
LE BLOND to offer



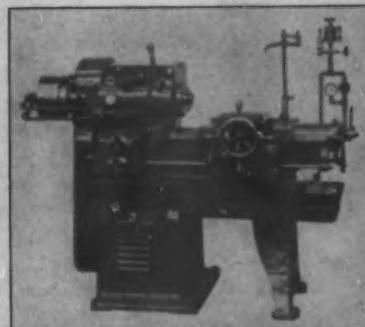
16" Regal Light Pattern Engine Lathe.



No. 12 Automatic Lathe. Anti-friction bearing equipped.



No. 9 Multi-Cut Lathe, with center drive head and double carriages. Anti-friction bearing equipped.

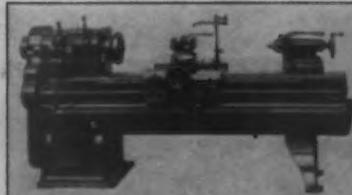


11" Rapid Production Lathe. Anti-friction bearing equipped. Specially equipped for a production job.

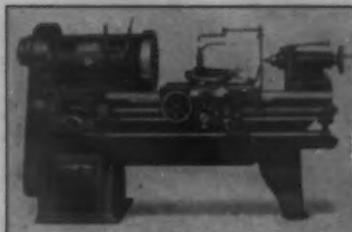
INDUSTRY?

That's a good question to ask yourself. Profits are coming through equipment and methods that increase the spread between the *mechanical* costs of making good products and what price-conscious buyers will pay for them.

Le Blond engineers, working intensively, have anticipated the need for an entirely new order of production equipment. Today Le Blond offers a series of machine tools that, when placed in your shop, will bring a quick return in investment, and a permanent contribution to net profits. Let us place the facts before you—without obligation.



16" Rapid Production Lathe. Anti-friction bearing equipped.



16" Engine Lathe. Anti-friction bearing equipped.



6AC Double Spindle, Crankshaft Lathe. Anti-friction bearing equipped.

BOOTH 1001
AT THE
SHOW

THE R. K. LE BLOND MACHINE TOOL CO., CINCINNATI, OHIO

All Movements of Billet Gouger Controlled by Seated Operator

(CONTINUED FROM PAGE 19)

handle the billets when the racks are in mesh with the pinions. The racks are of exact length so that they will travel out of mesh with the pinions on the manipulating arms when the arms reach their lowest position as shown in Fig. 5 and are solidly at rest against supporting surfaces. Further rotation of the driving rack pinions will have no effect on the manipulating arms, but will cause the continued movement of the gripping jaws until the billet is clamped in position against fixed backing blocks which may be changed to suit the size of the billets. The underside of the billet rests on hardened plates attached to the manipulating arms. Plates with different thicknesses are used to suit the size of the billet. A spring shock absorbing mechanism is employed in each manipulating arm.

The torque motors clamp the billet by pressing serrated blocks

against the billet. These blocks are wedge shaped, and the pressure of the cutting tool causes them to slide up on angular surfaces on the jaws and grip the billet tighter as the pressure increases. The blocks are also arranged so that the serrated surfaces will adjust themselves flat against the billet, which may be somewhat twisted. The positive stop provided may be set to absorb end thrust.

When the billet is unclamped, the gripping jaws are backed away from the billet before the racks mesh with the pinions on the

• • •

FIG. 3—The operator can enter a billet, clamp it, turn it over for deseaming the four sides, completely deseam or strip a billet, and eject it from the machine without moving from his position.

manipulating arms insuring that the gripping jaws will be clear of the billet when the manipulating arms start to raise it from the working position. The manipulating arms are rotated until they reach a position that will cause the billet to slide off on unloading skids at the rear.

When the billet has been unloaded, the manipulating arms are moved to the loading position, which is shown in Fig. 4. This position is reached when the surfaces on the plates attached to the manipulating arms are in line with the surface of the loading platform and is determined by a limit switch. The time of operation of this limit switch is adjustable to suit the thickness of the plates attached to the arms.

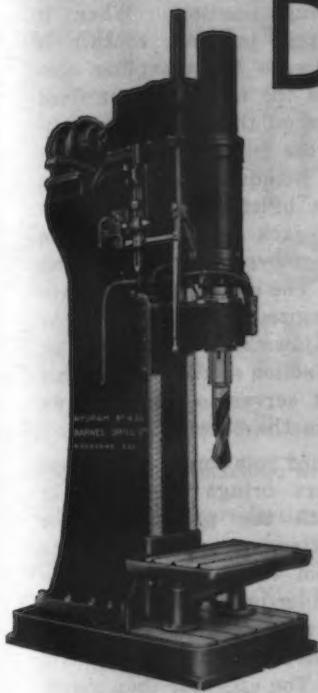
Pushed On to Manipulating Arms Mechanically

A mechanical billet pusher, which may be seen in Fig. 2, is used to push a billet on to the manipulating arms. As the arms are lowered, the billet will slide against the irregular surfaces of the index members attached to the side of the loading platform. This

(CONTINUED ON PAGE 38)



SELF-OILING, ALL-GEARED Drilling Machines

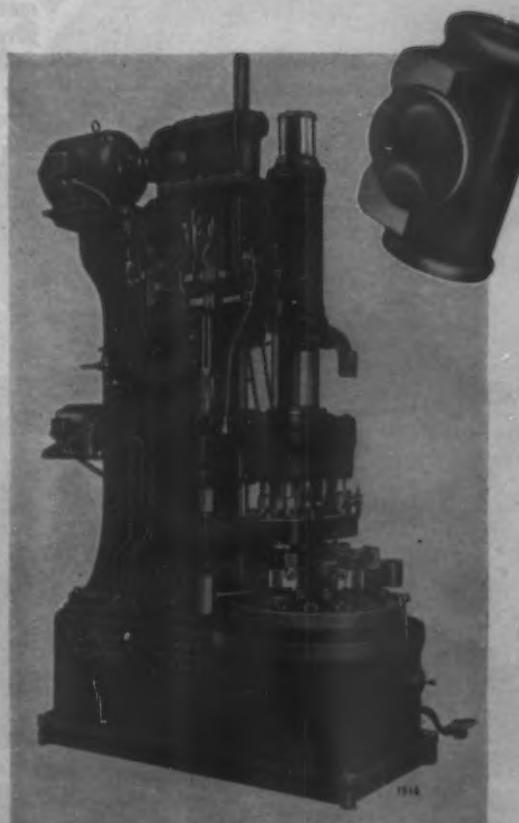


Hydram Heavy Duty Drilling Machine shown above. Made in three standard sizes. Enormously powerful. Has variable hydraulic feed directly over center of tools, and automatic operating cycle. Powerful drive for rotating tools eliminates torsional vibration by applying power very close to spindle nose. Design lends itself unusually well to application of multiple spindle heads.

Known the world over as accurate, powerful, reliable, durable machine tools; Self-Oiling, All-Geared Drilling Machines are built in a variety of sizes and types. In general, these handle drilling, boring, reaming, tapping, and similar operations ranging in size from $\frac{1}{2}$ " to 4" diameter, and larger in certain instances. There are simplified models, single purpose machines, quick-change feed and speed types, and hydraulic feed machines. There are single spindles, Gang drills, and High Production Units with vertical, horizontal, or angular spindles in almost any desired combination. In fact, there are standard or special Self-Oiling Drilling Machines to meet any known requirement in the range mentioned above. Each machine represents excellent value for every dollar of its price and will make its purchaser a handsome profit on his investment.



No. 242 Driller, above. Has quick change speeds and feeds, for variety of high-production manufacturing. Built in two smaller sizes $2\frac{1}{2}$ and $2\frac{1}{4}$. Also single-purpose types.



H-2 Hydram High Production Unit shown at right hollow mills and faces cylinders for automobile hydraulic brakes. Machine is extremely powerful and rigid. Has multiple spindle head, foot controlled hydraulic indexing table, automatic operating cycle including rapid approach, smooth uniform feed, dwell for perfect facing, quick return, and stop. Increases production, improves product. One of practically unlimited number of ways in which our drilling machine units of one or more types can be applied for producing more and better work at less cost. Investigate!



No. 262 Drilling Machine shown above. A wide-range, general purpose machine of great merit. Very popular for airplane motor building, tool shops, and general manufacturing.

BARNES DRILL CO.

814-830 CHESTNUT STREET
ROCKFORD, ILLINOIS, U. S. A.

(CONTINUED FROM PAGE 36)

contact will cause the billet to make a quarter turn before it reaches the position in which it is clamped by the gripping jaws. This quarter turn is of no advantage during the loading of the billet, but will serve to turn the billet from side to side when it is raised and lowered after each side is conditioned.

Three billet jacks are furnished, two of which may be seen between the clamping units in Fig. 4. These jacks may be placed either between or outside of the clamping units. Each jack is operated by an independent torque motor of geared type, fitted with an electric load brake. The motor is coupled to a traversing screw engaging a bronze nut carried in the sliding jack member. The 45 deg. angle surface of this member is faced with a hardened steel plate. The action of each jack is independent, and its movement will continue until it contacts the clamped billet regardless of the amount of camber in the billet.

Loading, unloading, clamping and turning of the billets are performed when the table is at the forward end of the bed. To prevent accidents, it is important that these operations occur only when the table is in this position. Electric current collecting equipment is mounted on the forward end of the table to collect current for the clamping and manipulating motors and the jack motors. These collectors are in contact with fixed

contactors on the floor only when the table is in the loading position. It is impossible, therefore, to operate these motors when the table is in any other position. Also, it is impossible to move the table by means of the foot treadle control while manipulating the billet. The collectors, which include several control contactors, may be seen in Fig. 6.

Control Centralized

Centralized control is an interesting feature of this machine. One operator, seated as shown in Fig. 3, can enter a billet, clamp it, turn it over for deseaming the four sides, completely deseam or strip a billet, and eject it from the machine on to discharge skids without moving from his seated position.

As previously stated, the table movement is controlled by the operator's feet and movement of the tools is controlled by his hands. An inspector stationed by the operator marks the defects as the surface passes by, and the operator gouges out the defects indicated by the inspector.

How the Machine Operates

When the first side of the billet has been deseamed, the operator

• • •

FIG. 4—Manipulating arms, with billet resting on them, are shown in the loading position. The surfaces on the arms are in line with the loading platform.

moves the handle of a convenient selector switch to a position marked "roll over." The table is automatically moved forward to the loading position. When it reaches this position, contact is made between the traveling contactors on the table and the fixed contactors on the floor. The motors on the billet jacks are energized, withdrawing the jacks from the billet. Limit switches stop the jack motors when the jacks are moved back a sufficient amount. The clamping motors are also energized, withdrawing the gripping jaws from the billet. A knocking action at the start of this movement serves to jar the jaws loose from the billet.

Continued rotation of the clamping motors brings the racks in mesh with the pinions on the manipulating arms and raises the arms from their seats, with the billet resting on them. When the billet is raised to a predetermined height, the clamping motors are stopped. The operator then moves the handle of the selector switch to a position marked "clamp." The clamping motors are energized in the reverse direction and the billet is lowered. Contact with the index members on the loading platform gives the billet a quarter turn. The continued rotation of the clamping motors, after the manipulating arms have reached their seats and the racks are out of mesh with the pinions on the arms, clamps the billet with a fresh side in position

(CONTINUED ON PAGE 40)



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MACHINES**

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Plan now to visit our Booth No. 811 at the National Machine Tool Builders Show in Cleveland, Ohio, September 11 to 21.



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**NO. 11 SINGLE CYCLE
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A new high-production machine for the finish cutting of automotive ring gears . . . the method employed is the fastest yet devised for the finishing operation.



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SPIRAL BEVEL PINION
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Rough cuts 2 to 3 times as many pinions . . . gives greater cutter life . . . quicker to load . . . roughs more uniformly and closer to finish size of tooth.

LEASON WORKS, ROCHESTER, N.Y. U.S.A.



FIG. 5—Billet in clamped position. When the arms are lowered against their seats, the racks on the gripping jaws travel out of mesh with the pinions attached to the arms.

(CONTINUED FROM PAGE 38)

for deseaming. The electric load brake locks the motors after they are stalled by the clamping action. The jack motors are also energized, moving the supporting jacks against the billet. These motors are also locked by electric load brakes when they are stalled. The operator then brings the table to the operating position by means of the foot control.

Billet Discharged On To Skids

After each side is deseamed, the rolling-over operation is repeated until all sides are deseamed. The operator then moves the selector switch to the position marked "unload." The table is automatically moved to the loading position and

this time the movement of the manipulating arms continues until their upper surfaces slope to the rear and make an angle of 25 deg. with the horizontal. During this movement the billet will slide from the arms on to the discharge skids at the rear.

The operator then moves the selector switch to the position marked "load." The clamping motors are energized, moving the manipulating arms back until the surfaces of the plates are in line with the loading platform. Another billet is pushed onto the arms by the mechanical billet pusher, which is separate from the machine. This pusher is controlled by the operator from his position. He then moves the selector switch

to the position marked "clamp" and a fresh billet is clamped in position for deseaming. The electrical control equipment was designed and built by the Westinghouse Electric & Mfg. Co.

Castle to Expand At Oakland

A. M. CASTLE & CO., iron and steel distributors, have purchased the former property of the Liberty Iron Works at 1301 Fifty-ninth Street, Oakland, Cal., with floor space in excess of 30,000 sq. ft. already under cover and additional ground space permitting future expansion. A complete stock of varied steel mill products will be carried and the new plant will be opened for business in the second week in August. The office, sales department and warehouse will open with a personnel of 20 people. It is expected that the new establishment will serve for the present the East Bay area and portions of neighboring valleys.

The Oakland warehouse will handle a complete stock of structural steel, bars, plates, boiler tubes and a complete line of all the various types of steel sheets now used in modern industry. A. M. Castle & Co. are representatives for the following mills: Lukens Steel Co., Inland Steel Co., American Rolling Mill Co., the Babcock & Wilcox Tube Co., Crucible Steel Co. of American, Bliss & Laughlin, Inc., and the Champion Rivet Co.



FIG. 6—Contactors attached to the table are in contact with contactors on the floor only when the table is in the loading position. It is impossible, therefore, to manipulate the billet when the table is in any other position.

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Plastics Industry Broadens Its Field

(CONTINUED FROM PAGE 23)

size, hardened and polished. Polishing is done by hand with emery and then with whiting. Molds must be very finely polished, and the hand polishing is a very important step in the operations to assure the production of molded parts having a high luster and finish.

The molding material used is in a powdered form. This is pre-

day. The preforming practice is now generally used in the plastic molding industry. While it requires an extra operation, it simplifies and speeds up production when the tablets reach the presses for molding under heat and pressure.

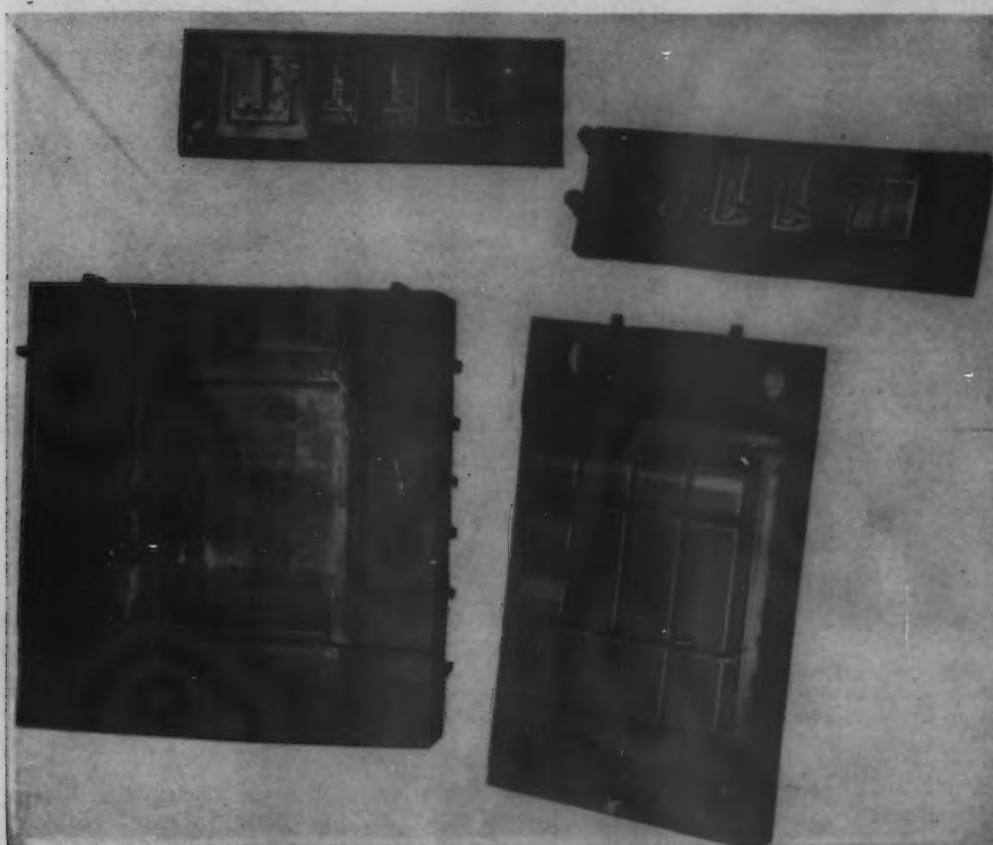
There are 99 semi-automatic presses in the plant for molding the plastic tablets into final shape. These are located on two floors, the

sults in economies in the use of high-pressure water. Air for blowing out molds is supplied by a large air compressor.

The plastic material, while under pressure in the mold, is baked at a temperature of 350 deg. F. The molds are heated by high-pressure steam from the power plant boiler. This steam passes through drilled channels in plates on either side of the mold. After the heat is shut off the molds are cooled by passing water through the heater plates.

The finishing department occupies a separate commodious room and is provided with a great deal of equipment of various kinds, most of which is used for cleaning plastic products, as it is a policy of the company to produce as far as possible finished products that do not require subsequent machining operations. In drill presses alone there are 50 machines in this department.

Most of the finishing work is the removal of the flash or fins, which is done with various types of equipment, depending on the parts to be cleaned. Rough edges are smoothed off with bench sanders, emery belts and emery disks. Holes are cleaned out on drill presses, some



MOLD for making a cash register drawer, one of the largest plastic products that has been made, is shown in the lower part of the picture. The housing for an electric ironer switch is made in the four cavity molds shown above.

formed by compressing the powder in the proper weight into tablets having roughly the same contour as the part that is to be molded but being about 50 per cent greater in volume. The tablets are made on automatic preforming machines in which the charge fed from a hopper is weighed, fed into the molding cavity, cold-pressed and ejected. A pressure of 4000 to 10,000 lb. is exerted in making the tablets. One machine will preform several thousand tablets in a

larger presses being on the ground floor. This equipment includes 18 350-ton presses, 24 150-ton, 18 110-ton and 39 of 60-ton capacity.

Pressure for molding is supplied by an accumulator operated by a high-pressure hydraulic pump providing a line pressure of 2750 lb. per sq. in. For closing the press after the work is in the mold a pressure of 800 lb. per sq. in. is applied by a low-pressure line, after which the high pressure is turned on. This arrangement re-

of which are equipped with tapered wheels for removing fins from the larger holes. Round formed parts are spun in chucks while the flash is being filed off, and there is a battery of tumbling barrels for removing fins from some small parts. Some pieces are of such an irregular shape that it is necessary to remove the flash by hand filing, but for nearly all work more rapid mechanical means are provided for taking off the flash.

(CONTINUED ON PAGE 44)

(CONTINUED FROM PAGE 43)

Certain molded pieces have holes that are found more economical to make by machining than in the molding operation. In that case the holes are drilled and tapped. A number of finishing machine operations are done on milling machines and bench lathes. Carboly or diamond tools are used for machining operations, being found more satisfactory than tools of other materials for working in the molded parts.

Many molded parts are a combination of metal and plastic material, both steel and brass being used but generally the latter. Push

work is being produced by using stainless steel in an artistic design as an insert that is embedded even with the surface of the molded piece, the steel being burnished to a bright finish after the part is molded.

Often a molded object calls for the stippling of a portion of a surface. This requires the stippling of the mold and an engraver is employed in the mold department for this particular work.

A vocational school for the molding department was established by the company last March and the management is gratified with the interest that employees are show-

free hand sketching, shop mathematics, shop economics and industrial relations. The instructors are men most familiar with their particular subjects, including engineers, cost accounting and time study men and foremen, the latter teaching plastic molding. With this course of instruction the employees are given the benefit of years of experience on all essential subjects relating to plastic molding.

In addition, there is an advanced course for the tool division in which instruction is given in tool designing and die construction and in other matters relating to tool room work that will make the em-



SOME of the numerous molded parts made in the plant. The cash register drawer is in the center of the group and above that is the housing for an air-purifying machine. The large piece at the left is a top housing for an electric vacuum cleaner. The white pieces are to replace glass in lighting fixtures.

buttons for the instrument board of an automobile and for numerous other purposes consist of a molded button in which is inserted a metal stem. For making these stems and numerous other inserts the plant has 60 automatic screw machines.

The molding of an object that is part metal is very simple. The metal part is placed in the cavity of the mold and the mold material is molded around it, the metal filling the place in the mold cavity that otherwise would be filled by the molding compound.

Depressions are frequently made in the surface of a molded push button or other piece to produce a word, letter or figure, and paint of a color different from the molded piece is applied in the depression. Very decorative molded

ing in this educational work. One hundred and two employees of all ages are taking the course, and these are divided into three divisions for which sessions are held at 9.30 a. m. on Monday and Tuesday and at 7.30 to 10.30 p. m. on Monday. The employees attend the school on their own time, and the hours are so arranged that they can attend outside of their regular working time. The course is scheduled for a duration of 50 weeks. The employees are graded as to merit and attendance and at the close of the school period they will be given certificates. The school is conducted in a room fitted up for the purpose on the top floor.

The course of instruction includes such practical subjects as plastic molding, blue print reading,

employees more efficient in making molding dies. In case employees are laid off because of a decline in business they are not barred from keeping up their attendance at the school.

The National Steel Corp., Pittsburgh, has declared the usual extra dividend of 12½c. a share on common stock, in addition to the regular quarterly dividend of 25c. a share.

Chisholm-Moore Hoist Corp., Tonawanda, N. Y., has appointed A. U. Smith, 4916 Abbott Avenue, Dallas, Tex., as representative in Texas, Oklahoma and Arkansas.

Ohio Machinery & Supply Co., Cincinnati, recently organized by William F. Meyer and Robert Margraf to deal in used and new wood and metal-working machinery and supplies, is established at 252 Butler Street.

New Deal Tool & Machine Co., Dayton, Ohio, recently organized by John Henne and E. C. Ehrenberger, is established at 17 Maryland Avenue.



Coating Strip With Copper Lead

(CONTINUED FROM PAGE 25)

num wound carborundum muffle; the molybdenum wire is .040 in. in diameter. The copper-lead bath is held at the proper temperature by electric heat radiating from molybdenum wire. The cooling zone at the bottom of the graphite die is 6 in. long. It is important that the steel be in the center of the copper-lead coating. However, if it should be a little off center, the bearing is machined in such manner as to take care of the situation.

After the bearing is cut to length, the ends are nipped. That is, two knife-like blades are driven from each end against stock. These knives are set so that they close exactly to the thickness of the steel. The blades thus are driven through the copper-lead to the steel and the coating is peeled off $3/32$ in. from each end of bearing.

The bearing then is set up on a broaching machine by the nipped ends and excess stock broached off each side. After being broached, the bearing is formed to a perfect half circle in two operations. The rough ends are broached off and the bearing given a restrike. It then is finished in the conventional way, except that the outside and inside diameters are finished by being turned on precision boring machines instead of being finish broached.

At present the production of these bearings occupies small space on the main floor and also on a mezzanine floor. The steel strip is uncoiled on a reel on the main floor and is fed up onto the balcony and down into the coating furnace. After it has been coated, the steel passes down through a pipe and

emerges onto the first floor, where it is cut to length and fabricated.

Steel Treatment and Metallography Studied

THE fundamentals of a broad field of related subjects concerning the treatment and examination of steel are well covered in a revised edition of Horace C. Knerr's "Heat Treatment and Metallography of Steel." This book may be procured from Mr. Knerr at 1116 West Montgomery Avenue, Philadelphia. In his review Mr. Knerr has clarified and simplified many of the complex problems involved in the modern use and treatment of metals, both ferrous and non-ferrous. The text has been particularly popular with an evening class in metallurgy at Temple University. The contents include a review of the manufacture and metallography of iron and steel, thermal analysis, theory of hardening, heat treatment and an extended discussion of alloy steels.



STEEL strip is uncoiled on reel on main floor, being fed up onto the balcony and down into the coating furnace. After being coated, the steel passes down through a pipe and emerges onto first floor, where it is cut to length and fabricated.

Steel Parts Are Carburized By Eutectrol Process

(CONTINUED FROM PAGE 24)

Carburizing with one of these units includes the following operating items:

- (1) City gas for heating furnace
- (2) City gas for DX unit
- (3) Natural gas for atmosphere
- (4) Labor
- (5) Alloy muffle replacement
- (6) Alloy trays
- (7) Electricity and cooling water

The furnaces are of the batch type and the clutch bodies are loaded in on trays supported on seven fixtures, 252 bodies to a tray. The tray weighs 36 lb. each and the fixtures 60 lb., while the combined weight of the 252 bodies is 94½ lb. As the furnace muffle will hold six trays (each 18 x 27 in.), the gross furnace load is 1146 lb. as against a net furnace load of 567 lb. It requires 1½ hr. to bring the work up to the desired heat of 1700 deg., at which it is held for 3 hr.

The cost analysis of treating a pound of work based on carburizing clutch bodies to a depth of 0.028 in. is:

City gas for furnace	\$0.00146
City gas for DX unit	\$0.00008
Natural gas for atmosphere	\$0.00032
Labor	\$0.00119
Alloy muffle	\$0.00119
Alloy trays	\$0.00083
Electricity	\$0.0009
Cooling water	\$0.00002
	<hr/>
	\$0.00518

The furnaces are built of steel plates, held together with structural shapes and lined with 4½ in. of insulating firebrick plus 7 in. of insulation. They are 9 ft. long, 6 ft. high and 6 ft. wide and set on steel legs. The firebrick hearths are mounted on firebrick piers. Each furnace is provided with a cast-alloy muffle 6½ ft. in length and 29 in. wide, in which are located skid rails on which the trays ride. The muffle rests on alloy rollers and supports, which in turn rest on the hearth. The carburizing gas passes in and out through pipe connections at opposite ends of the muffle.

Heat is furnished by several single-stage, low-pressure velocity burners mounted on the side walls and firing both above and below

the muffle. These burners operate on an air pressure of 1 lb. per sq. in. from an air blower. Gas is used at 6 in. water pressure. The correct temperature is maintained with an automatic temperature controller actuating a motor valve in the air line, and a chart of operating temperatures is kept by a recording pyrometer.

The carburizing gas is prepared from city gas in a standard Sur-

face Combustion DX Gas Preparation Unit and is delivered with an addition of natural gas to the muffle. Combustion is part of the preparation or reforming process. Approximately 37 cu. ft. of city gas per hr. per furnace is required. The control of the carburizing gas is easily maintained. Only about 1½ cu. ft. of this gas is needed per pound of work.

The units comprising the Eutectrol process of continuous gas carburizing can be placed in the production line in the manufacture of steel parts, since they can be built for a predetermined capacity which will synchronize with the speed and volume of output of any line.

Machine Tool Exports

(CONTINUED FROM PAGE 26)

facilities, and gradually spread into all foreign fields which had previously been dominated by American tools.

This naturally served as a further incentive to the development of better design and better workmanship. By 1927 and 1928 European machine tools were vastly improved over pre-war models—though not yet in many respects equal to American designs.

Then came the depression, which eliminated for some years all thought of aggressive development of foreign markets by American builders.

With the emergence from the depression came the development of nationalistic policies which have now been carried to such an extent that there is today no longer a free market.

Throughout Europe nations have erected higher tariff barriers, trade restrictions, and other arbitrary devices which interfere with the natural exchange of merchandise.

This trend has made it impossible for American machine tool builders to secure the increased exports which they expected would naturally follow improved conditions abroad. Today England, traditionally a free trade nation, has a duty on machine tools. France has various restrictions. In Germany, American makers can sell machine tools but are having the greatest difficulty in securing exchange in payment.

The "buy domestic products" propaganda is especially strong in

England. Today few standard American tools which have competing types in England can be sold in the face of the "buy British" slogan.

Furthermore, European countries have set up governmental agencies to aid in the financing of machine tool exports. This has given foreign makers a tremendous advantage over American manufacturers.

The situation with respect to Russia is an outstanding illustration. In the last 10 years Russia has been the largest importer of machine tools. Russia was at the outset short on cash and soon began asking for long terms. Some American manufacturers granted long terms and received large orders, and for some time the United States was the largest exporter to Russia. Many American manufacturers, however, were not in a position to give long-term credit.

At this point the German government set up a revolving credit fund to aid German machine tool exporters, enabling them to sell to Russia on a long-term basis with paper easily discountable because it was guaranteed by the government. Later England adopted similar measures. The result was that even before the depression Germany and England had cut in substantially on United States exports to Russia. Naturally with the advent of the depression long-term financing of Russian trade was impossible, and American machine tool exports to Russia dropped to

(CONTINUED ON PAGE 50)

YOUR SMALL MILLED PARTS

Also Deserve a Careful Analysis



CINCINNATI NO. 1-12 MILLING MACHINE

Keep these important 1-12 factors in mind:

- Accurate table trip.
- Rigidly constructed, promoting smooth cutting.
- Automatic table feed cycles.
- Rapid traverse to table 400" per minute.
- Extremely easy and convenient to operate, simple to set up.
- Spindle speeds—49, 65, 85, 119, 149, 208, 271 and 361 r.p.m. Higher speed series up to 1800 r.p.m. can be obtained at slight extra cost.
- Table feeds—2, 2½, 3¾, 4¼, 5¾, 6¾, 8¾, 11¼, 14½, 19, 24, 30, 38½, 48½, 62, and 80" per minute. Lower feed series can be obtained at slight extra cost.

The features and specifications of the Cincinnati No. 1-12 Miller are listed in circular No. M-583. May we send you a copy?



All the parts shown in this full size illustration are milled on the Cincinnati No. 1-12 Miller at production rates which range from 27% to 130% faster than the previous method.

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI GRINDERS INCORPORATED

KNEE TYPE AND FIXED BED MILLING MACHINES
SURFACE BROACHING MACHINES CENTER TYPE GRINDING MACHINES
CUTTER SHARPENING MACHINES CENTERLESS GRINDING MACHINES
CENTERLESS LAPING MACHINES

CINCINNATI

(CONTINUED FROM PAGE 48)

an inconsequential amount. This has remained the case up to the present time.

Competition Stiffer Today

Today European machine tool makers are in a position to compete very successfully with American manufacturers with respect to design as well as price. In the last five years English and German makers, particularly, have made great strides in the quality of their product. They have copied United States designs not properly protected by patents, and where it was necessary to avoid patents have redesigned tools in such a way that no conflict ensued. Finish and workmanship of European machine tools are good. The machines displayed at the recent London show are in many respects the equal of American machines—although there are still plenty of American models which are ahead of the European, particularly in production capacity.

The British export policy especially is very farsighted. England is selling machine tools in many markets at little profit in order that their machines may become accepted as standard. In France, for example, there still is a preference for American tools, but the British underbid to such an extent that American makers are unable to secure orders in volume as formerly. British prices today in France range from 25 to 50 per cent below American.

The European military background is an added incentive to the development of European machine tool facilities. Never again does Europe want to be caught short at time of war and be as dependent upon America as was the case at the beginning of the last war.

These, in brief, are the outstanding facts in the situation. They present, to say the least, a difficult challenge to American machine tool builders. Certainly, for the immediate future, they leave little ground for optimism with respect to the machine tool foreign trade outlook.

A Long-Term Program

This situation cannot be remedied over night. It must be approached from a long-term point of view.

First of all, it is obvious that little improvement is to be expected unless and until the present worldwide trend toward nationalistic restrictive tariff and trade agreements can be altered.

This does not mean that anything can be accomplished by carrying

"free trade," or advocating the general principle of abolition of tariffs. In the face of the present situation, this would be a futile and ridiculous gesture.

We can, however, support the Government in its effort to establish proper bilateral and reciprocal trade agreements with individual countries, and to oppose special restrictive agreements between other countries which would be detrimental to our own foreign trade possibilities.

Such agreements, if properly carried out, may enable this country to retain necessary tariff protection, and at the same time smooth out inequalities which cannot be adjusted in present tariff schedules. They might be a means whereby present restricting barriers could be scaled down, to some extent at least, without opening the doors too wide to undesirable foreign competition in this country. They might constitute an opening wedge which eventually would turn sentiment away from strictly nationalistic policies at least as far as trade with the United States is concerned.

The machine tool industry must take an active interest in these measures, in the belief that in the long run, over a period of years, they may have a definitely favorable effect upon export possibilities.

Further progress toward stabilization of our currency would, I believe, give great impetus to foreign trade.

Currency Uncertainties

As long as currencies are out of adjustment, trade is likewise out of adjustment.

At the present time the possibility of further dollar deflation may be postponing many foreign purchases. Naturally, if the dollar is going to drop further, foreign buyers will hold off, hoping to get more for their money.

A statement upon the part of the Government that it intended no further deflation of the dollar would, I believe, immediately stimulate foreign trade possibilities.

It is important to remember that as far as foreign trade is concerned, the factor of vital importance is not the relationship of currencies to gold, but the relationship of currencies to each other. If these relations can be stabilized, larger reciprocal trade will ensue.

Any move which would tend to minimize fluctuations between currencies would be valuable. This would be particularly true with respect to the relationship between the dollar and the pound. Regard-

less of the relationship of the dollar or the pound to gold, it might be possible, perhaps, to set up, by agreement, a definite relationship between the pound and the dollar. Inasmuch as the United States and Great Britain finance or control at least 70 per cent of the world's trade, it is obvious that such an arrangement would be of vast benefit in the stabilization and advancement of world trade.

The importance of such an arrangement to the machine tool industry is evidenced by the fact that the United Kingdom and Canada together have over a period of years represented by far the largest foreign market for machine-operated tools exported from the United States.

A third step which would be immediately beneficial to American machine tool manufacturers would be the setting up of some sort of governmental agency for the long-term financing of machine tool exports to Russia, similar to the arrangement now in effect in Germany and in England.

Exports to Russia, as previously described, rose to a high peak in 1931 and then dropped precipitously due to the failure of this country to set up long-term financing arrangements. It was hoped that the present administration would work out some such plan. The possibility was long discussed in Washington, and our Government recognized Russia. But at that juncture Congress passed the Johnson bill, which provided that no foreign governments which are in whole or in part in default in their obligations to the United States Government may obtain in the United States any financing which would help them buy goods from American manufacturers on long credits.

Russia represents an immediate and ready market for American-made machine tools—a market of which this country should take advantage.

All of these measures have to do with governmental policies and programs. But entirely independent of them, the industry itself may, I believe, take more aggressive action with respect to foreign markets.

We must keep one jump ahead of European makers with respect to design, workmanship, finish and productivity of our machine tools. Research and invention today may be the key to the reopening of foreign trade markets tomorrow. And we must maintain and push our contracts with foreign buyers, even though at the present time results may be discouraging.



MANUFACTURING SECURITY LIES IN DEPENDABLE GAGES

The art of making gages is not alone in making them accurate. They must remain accurate through a long and useful life. It becomes a question of steel and metallurgy, plus precision workmanship.

You can be sure of gages made by Pratt & Whitney. They are the best that painstaking effort and seventy-five years of gage experience can make. Put them to work guiding your production. It is a comfortable feeling to know that accuracy—dependable accuracy—is at the wheel.

We produce a long list of standard and special gages for many industries. We have gage experts who will be glad to give you the benefit of their experience. They have data on gaging methods and tolerances that you will find valuable in your work.

When you buy gages use Pratt & Whitney gage making facilities and experience. They cost no more, and in the end usually cost less. In the meantime let us send you literature showing our standard gage products.

PRATT & WHITNEY Co.
HARTFORD, CONN.



NEWS OF THE WEEK

Revised Bar Extras Include Both Advances and Reductions

THE revision of extras on bars and small shapes recently announced by the Carnegie Steel Co., and which probably will be adopted by other steel producers effective Aug. 10, is not entirely in favor of the buyer, since various reductions are matched by a number of increases.

Among changes that will result in lower charges are the elimination of a \$5 a ton extra for forging quality, a reduction from 50c. to 25c. per 100 lb. in the extras for "special requirement quality" bars and for "special carburizing steel" and the elimination of restricted chemical requirement extras for the latter two grades. A revision of one of the extras for flat automobile spring steel (round and square edge, concave or flat) also results in a lowering of charges. Formerly 1 and 1 1/8-in. wide flats with a No. 4 or greater thickness took an extra of 10c. per 100 lb. Under the revision, all thickness above No. 1 in this width will be sold at base and the 10c. extra will be confined to No. 1 to No. 4 inclusive.

A change in the extra for annealing or normalizing will involve a reduction or an increase depending on the size of the bar. Although the extra has been reduced from \$1 to 75c. per 100 lb., the old extra included machine straightening, whereas the new one does not. Machine straightening extras range all the way from no charge to 30c. per 100 lb.

Extras for close tolerance on hot-rolled bars have been liberalized. Formerly, if closer than one-half of the manufacturers' standard tolerances were specified and the bars were processed after reheating, the extra was 40c. per 100 lb. This special extra has been eliminated, so that the extra of 25c., for closer than one-half stand-

ard tolerances on material that need not be reheated, will apply.

Extras on Rounds, Squares, and Flats Advanced

The chief increases in extras result from the reduction of base sizes for rounds and squares and new extras on certain sizes of flats to keep them consistent with the advances on rounds and squares of the same approximate weight per foot. Under the old extras all rounds and squares 4 7/16 to 3 1/16 in. took the base price. Under the revision, the base price applies only to sizes 4 7/16 to 1 1/16 in. and new extras are applied as follows:

1 1/2 to 2 1/2 in.....	10c. per 100 lb.
2 1/2 to 2 1/2 in.....	15c. per 100 lb.
2 1/2 to 3 1/2 in.....	20c. per 100 lb.

In addition, the extras on sizes from 3 1/2 to 4 1/16 in. have been increased as follows:

3 1/2 to 3 1/2 in., raised from	10c. to 25c. per 100 lb.
3 1/2 to 4 1/16 in., raised from	15c. to 25c. per 100 lb.

Increases in extras on flats are shown in the table at the bottom of the page.

Among other changes is a revision of silicon extras to place control wholly on minimum limits, the same as control for standard ranges. The new provisions are as follows:

The minimum of the range agreed upon shall determine the extra. When a maxi-

mum limit only is specified over 0.30 per cent, the minimum of the highest standard range within the specified limit shall determine the extra.

Minimum, maximum, or range not specified—Base.

Any standard range where minimum is 0.15 or less—Base.

Any standard range where minimum is over 0.15 to 0.20 incl.—10c. per 100 lb. Where minimum limit only over 0.15 to 0.20 incl. is specified—10c. per 100 lb.

Any standard range where minimum is over 0.20 to 0.40 incl.—20c. per 100 lb. Where minimum limit only over 0.20 to 0.40 incl. is specified—20c. per 100 lb.

Daily Lectures At Metal Congress

DR. MARCUS A. GROSSMANN, director of research for Illinois Steel Co., will present a series of five daily lectures on "Heat Treatment of Steel," at the Seventeenth Annual National Metal Congress and Exposition to be held in Chicago the week of Sept. 30, according to an announcement by W. H. Eisenman, managing director of the show and national secretary of the American Society for Metals.

Dr. Grossmann's metallurgical experience is wide and varied. He was graduated from the Massachusetts Institute of Technology in 1911, and after a year of teaching was successively connected with the Pittsburgh Testing Laboratories, Vanadium Corp. of America, Electric Alloy Steel Co., Atlas Steel Corp., U. S. Bureau of Standards, and several subsidiaries of Republic Steel Co. He has been with Illinois Steel since 1931.

Changes in Extras on Flats

(Per 100 Lb.)

Width	4 to 3 1/2 in.	3 to 2 1/2 in.	2 to 1 1/2 in.
2 1/2 to 3 in.....	.....	25c., was 20c.	.....
3 1/2 to 3 1/2 in.....	.....	25c., was 20c.	15c., was 10c.
3 1/2 to 4 in.....	35c., was 30c.	25c., was 20c.	20c., was 10c.
4 1/2 to 5 in.....	35c., was 30c.	25c., was 20c.	20c., was 10c.
5 1/2 to 6 in.....	40c., was 30c.	30c., was 20c.	20c., was 10c.

Today it's **HOMPSON**

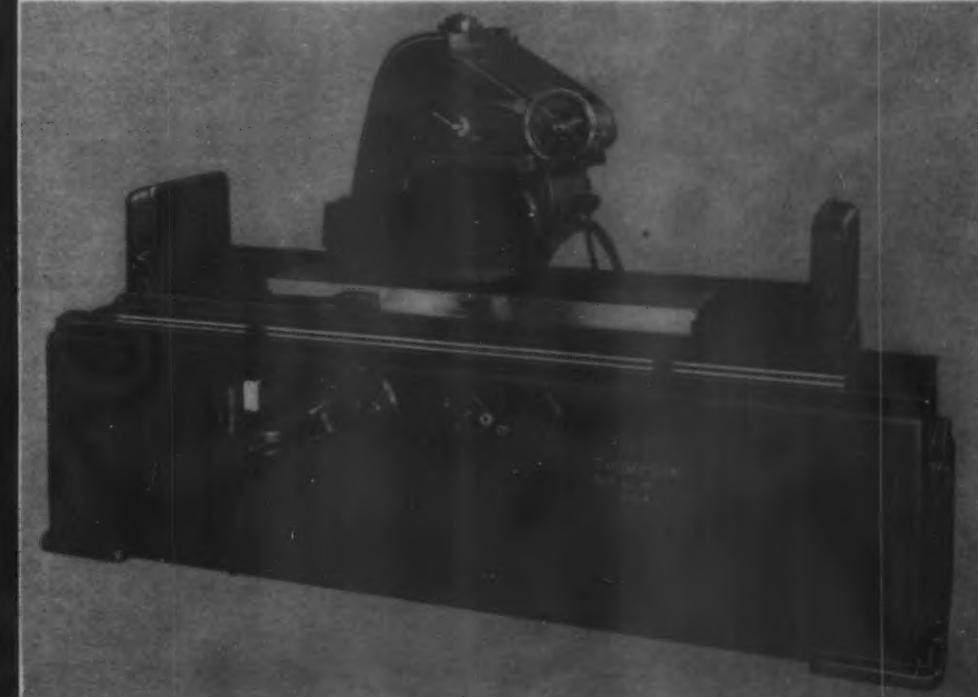
The new Thompson 12" x 16" x 60" Hydraulic Surface Grinding Machine has all the flexibility and speed of the smaller models, in addition to a greater range with a 20" diameter by 2" face wheel. Control is simplified and grouped on the operating panel, obviating the necessity for the operator to study the manipulation of complex levers and valves.

A study of the features of this line of grinding machines will point the way to lower grinding cost in your plant.

- Hydraulic wheel head feed
- Hydraulic wheel truing
- Hydraulic wheel head rapid traverse
- Precision motorized spindle
(Standard shaftless motors)
- Hydraulic table feed 10 to 90 f.p.m.
- Pressure feed oiling (filtered)

THE THOMPSON GRINDER COMPANY, Springfield, Ohio, U. S. A.

SEE US AT THE SHOW . . .
BOOTH NO. 24



Send for
New
Catalog
G 4

Work Begun on New Coke Oven Batteries at Ford Plant

EXCAVATION has been begun at the Rouge plant of the Ford Motor Co. at Dearborn, Mich., for two new batteries of coke ovens which, when completed, will provide 8,000,000 cu. ft. more gas per day for plant operations than is now available from sources within the Rouge grounds.

The excavation marks the first step in a project which will cost \$4,000,000. Foundations for the two batteries, each comprising 61 ovens, will be laid before winter, and the ovens will be ready to produce by next summer. The \$4,000,000 will pay for improvements to present by-products production equipment in addition to actual installation of ovens.

To insure a greater degree of permanency in the new ovens, concrete and steel pilings are to be sunk 90 ft. to hard-pan. There will be about 328,000 lb. of silica brick used in the construction of each of the 122 new ovens, in addition to the weight of metal in the structures. The total weight of the brick in the two batteries will be 20,000 tons.

The new batteries will replace a portion of old coke-making equipment and will extend southward for more than 500 ft. from the end of a present 60-oven battery. Railroad track serving the new and old batteries will, at its southern extremity, be relaid to accommodate the larger new structures.

Under the old coke and gas-making schedule, which will be replaced, 4800 tons of coal were used daily to produce 33,600,000 cu. ft. of gas for use in other portions of the Rouge plant and 24,000,000 for use at the coke ovens.

The new program contemplates the use of only 3800 tons of coal to produce 41,600,000 cu. ft. of gas for operations elsewhere in the plant, and 4,000,000 for use at the ovens. This is made possible by the fact that the new ovens are so constructed that they can utilize blast furnace gas for heating purposes. Older ovens at the Rouge plant all utilize a percentage of their own gas output to heat their coal charges. All the gas output of the two new batteries of ovens, which will total 36,000,000 cu. ft. a day at capacity, may be used for operations elsewhere in the Rouge plant.

While gas output, under the new program, will be increased, coke production will be reduced, al-

though it will be more than sufficient to supply the Rouge blast furnaces which have recently been rebuilt to turn out about 1600 tons of pig iron a day.

From the 3800 tons of coal which will be charged in the new ovens and those of the old ones which will continue in use, 2850 tons of coke will be procured, a decrease of 750 tons a day from the 3600 tons of coke procured from 4800 tons of coal under the previous program.

Carborundum Co. Buys Hutto Company

THE Carborundum Co., Niagara Falls, N. Y., has purchased the personal assets and good will of the Hutto Engineering Co., Inc., Detroit, pioneer manufacturer of cylinder honing and grinding tools and machines. Hutto products are generally used throughout the world in the manufacture of motor cars, Diesel engines, air compressors and similar equipment where extreme accuracy and finish are required.

The operations of the Hutto company will be continued and expanded as a new division of the Carborundum Co., to be known as the Hutto Machine Division, and will be carried on in the present modern plant located at 515 Lytle Avenue, Detroit.

The present management is being continued. Joseph A. Carlin has been appointed manager, and John E. Kline, chief engineer, of the new division.

Carnegie to Build Wide Plate Mill

CARNEGIE STEEL CO., Pittsburgh, announces that it will build a modern wide plate mill at Homestead Works. This is the second step in a program of modernization of mills and other facilities at its various works being carried out by Carnegie company in line with broad plans which have been under consideration for several years past; the first step being the installation of a continuous, hot-rolled strip mill now under construction at McDonald, Ohio.

The new Homestead mill will

produce plates of standard and special steels, including wide thin plates of Cor-Ten, the new high-tensile steel having a high resistance to corrosion recently brought out by United States Steel Corp. subsidiaries and now being used in new light-weight railroad cars and for other purposes. The mill will be capable of producing sheared plates up to 90 in. wide and down to 3/32 in. thick. Work on the new mill will start at once.

Government Buying Offices Listed

AN unofficial list of purchasing offices of the Federal Government, which includes not only the main offices in Washington but also the field purchasing agencies all over the United States, has been prepared by the Machinery Division, Department of Commerce.

It is believed that this is the first time that such a full list has been made up by any Government department. This list should be of practical use to any firm interested in selling machinery, equipment, or supplies to the Federal Government. The list is available gratis and can be obtained by writing to the Machinery Division at Washington.

Announces Refinement In Wilson Cover

THE Wean Engineering Co., Inc., Warren, Ohio, has announced the development by the Lee Wilson Engineering Co., Cleveland, of an added refinement to Wilson covers, this being a new system of automatic continuous electrical ignition for the burners, together with automatic shut-off of fuel.

This system makes it possible to light a Wilson cover by merely throwing a switch and opening one gas valve. In case of power failure, the gas is automatically cut off and cannot come back on to the furnace without manual setting.

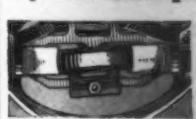
The electrical ignition system very much reduces the time necessary for changing covers from one charge to another; eliminates the possibility of burners not being lighted; and aids in obtaining more rapid uniform annealing. The ignition system is of particular advantage where exhaust systems are hooked up to the exhaust end of burner tubes and eliminates the danger of the exhaust system extinguishing the burners.



Thousands of Speeds at the touch of a finger

Speed infinitely adjustable throughout entire range. Ratio, 6 to 1. Transmission and motor built as one compact, highly efficient unit.

Hardened steel rollers transmitting drive from constant speed input race to variable speed output race operate under torque - controlled contact pressure. Rollers inclined by operation of speed control roll themselves into required ratio position. Only finger touch required on control wheel.



INCLINED ROLLER

With 1,750 r.p.m. motor, any speed from 600 to 3,600 r.p.m. immediately available. Built with 1,200 or 900 r.p.m. motors for correspondingly lower speeds.

Always starts from and stops in low-speed, high-torque position. . . . Avoids overloading motor.

Positive drive is assured under all conditions of loading, including rapid reversing or extreme overload.



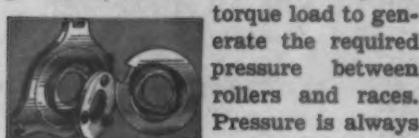
RACE AND ROLLER ASSEMBLY

Unit is torque conscious. Automatic pressure device utilizes the imposed torque load to generate the required pressure between rollers and races.

Pressure is always proportional to the input or output torque load—never exceeds requirements.

Revolving parts in positive rolling contact are inherently in balance, assuring exceptional quietness and freedom from vibration at all speeds.

No adjustments of any kind are ever required. New Departure Ball Bearings used throughout.



TORQUE FLANGE

Outstanding ease of control

. . . Speed changes obtained instantly either by hand-wheel on unit or remote control to suit any type of installation. Full automatic cam-operated control for speed changes occurring in variously timed cycles.



Time required for unit to shift up or down to any desired speed is readily adjustable. Minimum time, low to high or vice versa, three seconds.

Unit adapted to mounting in any position—vertical, horizontal, sidewall or ceiling.

Send for catalog PI, giving detailed description.

The New Departure Manufacturing Company, Bristol, Connecticut.

NEW DEPARTURE
Variable Speed
TRANSITORQ

Iron and Steel Exports Gain—Imports Drop

Exports (In Gross Tons)	June		Six Months Ended June	
	1935	1934	1935	1934
Pig iron.....	417	266	1,421	1,892
Ferrromanganese.....	1	2	35	16
Iron and steel scrap.....	215,098	143,115	1,115,942	738,848
Tin plate scrap ¹	2,973	...	23,145	...
Waste-waste tin plate.....	2,584	...	15,139	...
<i>Pig iron, ferroalloys and scrap</i>	221,073	143,383	1,155,682	740,756
Ingots, blooms, billets, sheet bars.....	1,778	4,025	28,280	8,637
Skelp.....	530	3,976	6,766	40,785
Wire rods.....	2,368	2,539	11,162	15,798
<i>Semi-finished steel</i>	4,676	10,540	46,208	65,220
Steel bars.....	3,645	2,670	25,917	21,710
Alloy steel bars.....	148	124	1,180	1,709
Iron bars.....	53	46	614	554
Plates, iron and steel.....	2,971	3,780	19,170	17,657
Sheets, galvanized steel.....	6,391	4,866	37,872	30,766
Sheets, galvanized iron.....	99	80	723	773
Sheets, black steel.....	9,711	9,556	53,370	42,691
Sheets, black iron.....	382	294	2,936	1,846
Hoops, bands, strip steel.....	3,173	2,944	21,332	16,608
Tin plate and taggers' tin.....	7,160	10,206	53,695	97,137
Terne plate (including long ternes) ²	161	1357	1,357	1,357
Structural shapes, plain material.....	2,520	2,066	14,915	14,289
Structural material, fabricated.....	2,700	1,409	12,543	9,109
Tanks, steel.....	442	301	2,992	3,722
Steel rails.....	6,608	1,865	19,171	42,754
Rail fastenings, switches, spikes, etc.....	1,011	541	4,797	10,617
Boiler tubes.....	328	655	4,779	3,393
Casing and oil line pipe.....	1,516	5,968	16,666	34,483
Pipe, black and galvanized, welded steel.....	2,015	3,242	19,163	22,559
Pipe, black and galvanized, welded iron.....	219	157	1,847	1,155
Plain wire.....	4,364	3,249	18,679	18,667
Barbed wire and woven wire fencing.....	2,712	3,815	15,578	19,435
Wire cloth and screening.....	119	82	514	399
Wire rope.....	414	240	2,208	1,439
Wire nails.....	644	1,578	4,871	7,573
Other nails and tacks.....	250	529	1,784	2,691
Other wire and manufactures.....	335	574	2,457	2,528
Bolts, nuts, rivets and washers, except track.....	430	386	3,268	2,390
Other finished steel.....	122	202	707	889
<i>Rolled and finished steel</i>	60,643	61,425	365,105	429,543
Cast iron pipe and fittings.....	1,229	2,421	7,389	7,395
Malleable iron screwed fittings.....	245	224	1,590	1,480
Carwheels and axles.....	495	343	11,407	1,847
Iron castings.....	685	512	4,391	3,915
Steel castings.....	152	193	1,257	1,002
Forgings.....	489	365	2,905	2,012
<i>Castings and forgings</i>	3,295	4,058	28,939	17,651
Total	289,687	219,406	1,595,934	1,253,170

Imports (In Gross Tons)

Imports (In Gross Tons)	June		Six Months Ended June	
	1935	1934	1935	1934
Pig iron.....	6,583	5,168	53,486	65,386
Sponge iron.....	204	258	666	690
Ferrromanganese and spiegeleisen ³	4,153	3,761	22,528	17,057
Ferrochrome ².....	...	...	1	34
Ferrosilicon ³	52	298	518	531
Other ferroalloys ⁴	Scrap	13	1	46
<i>Pig iron, ferroalloys and scrap</i>	2,417	3,454	12,056	27,202
Steel ingots, blooms, etc.....	13,409	12,952	89,556	110,446
Wire rods.....	28	268	1,032	663
<i>Semi-finished steel</i>	722	1,377	7,174	6,732
Concrete reinforcement bars.....	750	1,645	8,206	7,395
Hollow bar and drill steel.....	300	65	808	482
Merchant steel bars.....	66	75	471	335
Bars whether solid or hollow ⁵	324	1,881	7,830	9,196
Iron slabs.....	1,187	...	3,081	...
Iron bars.....	317	51	634	346
Boiler and other plate.....	94	10	167	81
Sheets, skelp, and saw plate.....	1,286	132	3,982	2,185
Tin plate.....	1	36	101	68
Structural shapes.....	4,394	2,174	17,481	10,255
Sheet piling.....	666	...	1,109	...
Rails and rail fastenings.....	185	527	1,644	1,626
Welded pipe.....	361	277	915	1,023
Other pipe.....	3,174	143	8,916	1,767
Cotton ties ⁵.....	...	1,743	...	1
Other hoops and bands.....	2,517	1,669	11,074	7,630
Barbed wire.....	2,344	880	13,322	5,408
Round iron and steel wire.....	488	228	2,184	1,358
Telegraph and telephone wire.....	4	...	17	2
Flat wire and strip steel.....	97	125	803	763
Wire rope and strand.....	123	120	920	707
Other wire.....	40	163	437	386
Nails, tacks, and staples.....	1,542	873	8,492	3,503
Bolts, nuts, and rivets.....	56	12	198	166
Horse and mule shoes.....	28	66	346	231
<i>Rolled and finished steel</i>	18,928	10,173	84,766	48,568
Malleable iron pipe fittings.....	...	...	46	7
Cast iron pipe and fittings.....	27	...	27	7
<i>Castings and forgings</i>	94	88	590	705
Total, gross tons.....	33,208	24,946	182,891	167,621

¹ Manganese content. ² Chrome content. ³ Silicon content. ⁴ Alloy content. ⁵ New class, no comparable figures for 1934 or previous years. ⁶ New classification as result of the reciprocal trade agreement with Belgium. No comparable figures for previous month or year.

WASHINGTON, Aug. 5.—June exports of iron and steel products, at 289,687 gross tons, showed a gain of some 3000 tons over the May volume of 286,599 tons. This set a record for the month and for the first time in the past five years exceeded the May volume. Scrap continued to lead as the major iron and steel product exported on a tonnage basis. The 215,098 tons shipped were taken chiefly by Japan, 139,955 tons; Italy followed with 26,271 tons, while the United Kingdom was the destination of 22,825 tons. Scrap exports in May were 209,425 tons. Total exports for the first six months of this year were 1,595,934 tons, an increase of 27 per cent over the corresponding period last year.

United States Imports of Pig Iron by Countries of Origin

(In Gross Tons)	Six Months Ended June		June	
	1935 1934		1935 1934	
	June	1935	June	1935
United Kingdom	1,050	...	11,351	150
British India	2,952	2,711	11,495	17,728
Germany	100	...	100	...
Netherlands	1,364	1,342	18,765	40,666
Canada	368	729	5,589	4,664
France	...	...	50	...
Belgium	...	...	100	50
Norway	152	169	1,762	962
Sweden	107	40	447	265
Russia	490	...	2,973	...
All others	177	854	901	...
Total	6,583	11,230	53,486	65,386

Sources of American Imports of Iron and Manganese Ores

(In Gross Tons)	Manganese Concentrates 35 Per Cent		Iron Ore or Over	
	June		1935 1934	
	June	1935	June	1935
Canada	7,186	...	27	...
Cuba	22,000	33,000	...	...
Chile	88,300	108,950	...	...
Spain	10	...	...	...
Norway	7,060	7,758	...	...
Russia	9,000	7,300	9,176	5,716
India	...	701	...	...
Brazil	...	...	4,673	...
West Africa	1,311	5,089	...	...
French Africa	11,550	...	...	...
Australia	29,435	...	...	...
United Kingdom	36	...	...	...
Other Countries	17,727	12,470	47	...
	157,568	188,214	11,235	15,505

WHY G-E Equipment Means More for Your Money

WHEN you are selecting electric equipment for your machine tools, consider these three reasons why G-E motors and control mean more for your money.



The engineers

who design G-E control devices have an intimate knowledge of the individual characteristics of the G-E motors the control devices are to govern and protect. This is your assurance not only of a high-quality electric unit, but also of long life and continuous operation at low cost.



Moreover, our many years of close co-operation with leading machine-tool builders, plus our long experience as a large machine-tool user, has given us a very definite understanding of the conditions machine-tool equipment must meet—an understanding that is reflected in the profitable performance of



thousands and thousands of G-E equipped machine tools.

And behind our complete lines of electric equipment is General Electric's acknowledged engineering ability, backed by scientific research, skillful workmanship, and carefully manufactured

materials.



General Electric Co., Schenectady, New York.

011-72

GENERAL ELECTRIC

Foreign Trade in Iron and Steel Shows Favorable Balance

WETHER measured in tons or dollars, and whether scrap iron and steel be included or excluded from consideration, the foreign trade of the United States in iron and steel products shows a trade balance decidedly favorable to the American manufacturer or dealer in these materials, according to the minerals and metals division, department of Commerce.

During the first five months of 1935 export shipments of all classes of iron and steel aggregated 1,306,247 gross tons, valued at \$36,548,238. Imports of precisely the same kinds of goods during the five-month period have amounted to only 149,683 tons, valued at \$5,775,666—the result being a favorable balance of trade to the United States to the extent of 1,156,564 tons of iron and steel exports, valued at \$30,772,572.

During the January-through-May period of last year exports totaled 1,033,764 tons, valued at \$34,962,339, as against imports of

142,763 tons, valued at \$4,346,111. Thus our favorable trade balance for the first five months of this year exceeded that of a similar period last year, it was stated.

If scrap iron and steel be entirely excluded from consideration, our favorable balance of trade in semi-finished and finished steel products for the first five months of this year still amounted in volume to 232,632 tons and in value to \$20,713,623.

In volume, our exports of iron and steel to June 1 of this year have exceeded shipments during the comparable 1934 months by 272,483 tons, or 26.3 per cent. On the same basis, our imports this year have increased by 6920 tons, or 4.75 per cent. In value, this year's imports show a larger relative increase and this is due to the marked decreases which have occurred in the imports of scrap and pig iron, both of which have a low unit price and both of which in 1934 were much more important on a tonnage basis than in 1935, it was asserted.

structure. The 104-ft. span 200-ton crane is the largest ever to be entirely welded and has a dead weight of approximately 205 tons. Two 20-ton cranes will be provided in the machine shop, which extends alongside the main aisle on the west. A total of more than 2000 tons of structural steel, all electrically welded on the job, presents an unusual application of the welder's art to heavy construction.

Annealing ovens, 22 x 200 ft., are being constructed to accommodate the entire frame of the largest locomotive at one heat.

More than two and a half miles of railroad trackage are being laid on the site and will include a three-quarter-mile test track constructed in a manner comparable to automobile proving grounds. There will also be special testing pits where the Diesel locomotives may operate in position.

Diesel Locomotive Plant Half Completed

CONSTRUCTION of the plant at McCook, Ill., where the Electro-Motive Corp., a subsidiary of General Motors Corp., is soon to initiate the locomotive industry in methods of mass production with a regular assembly line for Diesel-electric locomotives, has

been approximately half completed, according to an announcement by W. J. Austin, president of the Austin Co., which is building the plant.

The main erecting aisle, 550 ft. long, has been constructed to carry the heaviest traveling crane that has ever operated on a welded



58—THE IRON AGE, August 8, 1935

Prize Bridges Of 1935

THE most beautiful structural steel bridges built in the past year were the Bourne bridge across Cape Cod Canal at Bourne, Mass., and Douglas County bridge No. 667, a grade separation structure between road 44 and the Dodge arterial highway, near Omaha, Neb.

These bridges will be decorated with stainless steel plaques by the American Institute of Steel Construction at appropriate ceremonies. At the Bourne bridge the ceremonies have been scheduled for Aug. 15.

Each year the institute invites a jury composed of architects and engineers of national prominence to select the most beautiful bridges in each of three classes. Class A includes bridges costing \$1,000,000 and over. Class B embraces bridges costing from \$250,000 to \$1,000,000. Class C includes bridges costing less than \$250,000. No first prize was awarded in Class B this year.

Steel Fabricators to Meet in October

AMERICAN INSTITUTE OF STEEL CONSTRUCTION will hold its 13th annual convention at the Greenbrier Hotel, White Sulphur Springs, W. Va., on Oct. 16, 17 and 18.

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PERSONALS

J. G. CARRUTHERS has been appointed special representative, Bethlehem Steel Co., Bethlehem, Pa. He first entered the steel industry as assistant manager of sales for Cambria Steel Co. at Cincinnati. Later he served as assistant manager, then manager of sales at Cincinnati for the Carnegie Steel Co., Illinois Steel Co. and Tennessee Coal, Iron & Railroad Co. From Cincinnati he was transferred to Chicago, and in 1922 he became associated with Otis Steel Co., Cleveland, as general manager of sales and member of the board of directors, later becoming vice-president. Mr. Carruthers will be attached to the Bethlehem Steel Co. general offices at Bethlehem.

❖ ❖ ❖

W. BRUCE CALDWELL has been named works manager of the Calumet Steel Co., recently acquired subsidiary of Borg-Warner Corp., at Chicago Heights, Ill. He has been associated with the steel industry since his graduation from the School of Mechanical Engineering of Cornell University in 1912. After leaving college he was connected with the National Malleable & Castings Co., Sharon, Pa., until the outbreak of the World War, during which he served in the aviation division of the Navy. He subsequently was connected with the Sharon Steel Hoop Co., Sharon, Pa., from 1919 until 1933, serving as general superintendent of all of the plants of that company.

❖ ❖ ❖

R. W. JOHNSON has been appointed assistant manager of sales of Kalman Steel Corp., subsidiary of Bethlehem Steel Corp. Prior to assuming his new duties Mr. Johnson was secretary of the Concrete Reinforcing Steel Institute, Chicago, and secretary of the Code Authority, Reinforcing Materials Fabrication Industry. He was also secretary of the Steel Joist Institute and of the Steel Joist Institute Code Authority. Subsequent to his graduation from the United States Military Academy in 1922, he became assistant city engineer of Indianapolis, Ind. He served later as promotional engineer of the Portland Cement Association, and in 1927 became affiliated with the Concrete Reinforcing Steel Institute as engineer. Mr. Johnson will be attached to the general offices of the corporation at Bethlehem, Pa.

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COL. J. S. ERVIN, president, Mackintosh-Hemphill Co., Pittsburgh, sailed for England on Aug.

2 at the invitation of a group of steel men and steel mill builders in Europe, to discuss plans for the use of American-designed machinery in the current expansion of metal-working plants abroad. He was accompanied by F. H. MOYER, vice-president in charge of engineering, and H. V. BLAXTER, chairman of the Mackintosh board.

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W. S. THOMSON, formerly assistant secretary of the Concrete Reinforcing Steel Institute, Chicago, has been made secretary. He was at one time chief engineer of the

connection with the makers of Exide batteries was in 1900, at the factory headquarters in Philadelphia. He was employed in the commercial laboratory until January, 1902, when he was transferred to the operating department of the New York branch, assuming charge of the department one year later and retaining this position until September, 1906. Mr. Beedle spent the following nine years as power engineer with the Bell Telephone Co. of Canada. Since 1920 he has been assistant manager of the company's branch office in Boston.

❖ ❖ ❖

DR. EVERETT P. PARTRIDGE has been appointed director of research of Hall Laboratories, Inc., Pitts-



J. G. CARRUTHERS



W. B. CALDWELL



R. W. JOHNSON

Corrugated Bar Co. and at a later date was in the service of the Kalman Steel Co.

❖ ❖ ❖

J. G. BENEDICT, general manager of the Landis Machine Co., Waynesboro, Pa., sailed on Aug. 2 for a stay of about a month in England and Scotland.

❖ ❖ ❖

CHESTER J. ROBERTS, of Milwaukee, has been appointed assistant general manager of the Four Wheel Drive Auto Co., Clintonville, Wis. He is an industrial engineer, has spent 10 years in the automobile and paper industries, and for six years has been manager of the industries and trade promotion divisions of the Milwaukee Association of Commerce.

❖ ❖ ❖

HARRY W. BEEDLE has been appointed manager of the Boston branch of the Electric Storage Battery Co., Philadelphia. His first

burgh. He has devoted himself for the past 10 years to boiler water problems.

❖ ❖ ❖

HARRY S. BROWN, who has been since 1927 vice-president in charge of sales of the Foster Wheeler Corp., New York, has been elected president, succeeding his brother, J. J. BROWN, who continues as chairman of the board. DAVID McCULLOCH, formerly secretary and general manager, has been elected executive vice-president, and WALTER F. KEENAN, JR., GEORGE B. FERRIER and J. J. NELLIS have been elected vice-presidents. P. N. WENZ has been made secretary.

❖ ❖ ❖

GEORGE L. GAALAAS, for the past nine years associated with the Ideal Electric Mfg. Co., has been appointed sales engineer of the electrical sheet department of the

(CONTINUED ON PAGE 95)



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THIS WEEK IN WASHINGTON

Business betterment may put quietus on brain trust eruptions.

As for taxes, "you ain't seen nothin' yet" and won't until after election.

Politicians studying ways to seize credit for business upswing.

Organized labor, in no hurry for Wagner labor board, makes hay while the sun shines.

Ways and Means Committee find Guffey Bill hard to swallow.

Walsh Bill may prevent dumping of foreign, low wage goods.

WASHINGTON, Aug. 6.—Returning to the Washington madhouse, one finds differences of opinion as to whether it is getting madder or there is convalescence toward less madness. . . . Hope for anything like sound reason long has been abandoned while the brain trust is on the job and rabble rousing continues to be a vote catching profession, and in these days when the political campaign is getting under full steam it may be assured the profession will be widely practiced.

On the whole, however, Washington, chaotic as it is and jumbled as is the legislative mess, appears to be less violent. . . . This implies hope rather than any definite promise. . . . For the lava of politics, and Utopian ideas still churns lively and may be leavened into an eruption at any moment. . . . But on the surface there is less turmoil, though more than an amplitude continues to manifest itself. . . . But there are more or less hopeful signs. . . . For one thing the brain trust outwardly is rather quiescent. . . . Some think suspiciously so and fear that inwardly there lurk mental storms that might break forth crashingly at any time.

Most encouraging of all, however, are reports that Presidential advisers, not classified as coming within the charmed circle of the brain trust, have urged that the country be given a sorely needed rest from new legislative didos. . . . And the reports have it that the

New Deal has concluded not to pull any more mysterious measures of reform and experimentation out of the hat with orders that the present session of Congress jam them on a gasping public. . . . There seems to be a clearer realization of the fact that real danger would lie in adding further to the chaotic log jam of legislation which has a weary Congress hanging on to the ropes and the country in a giddy state. . . . And Washington has been made fully aware that the people generally join business and industry in the devout wish that Congress would cease its bedlam pronto, close shop and go home. . . . or wherever else it may choose to go. . . . Provided it does it on its own expense . . . rather than to frame up some joyous junket under the pretense of "official business" to be paid for by soaking the taxpayer, who is in for a soaking such as he has never felt before . . . though not until after the political campaign. . . . But it's coming and it will not be on

the "distribute-the-wealth" scale by any means. . . . As General Johnson said to code authorities of the land on an almost forgotten notable occasion, "You ain't seen nothin' yet;" so it can be said to the taxpayer, whether a small or large contributor. . . . The wild spending spree means just that. . . .

Rugged Individualism Wanted Back

And another reason for the quieting down of legislative hysterics in Washington, though possibly New Dealers won't admit it, is that they want the much despised "rugged individualism" to be given a chance once more to see what it can do to coax prosperity from around the corner. . . . And they think that after some six years of hiding, with an occasional false start now and then, it really is making the turn and there is less desire to let it see its shadow and get scared back. . . . At least not until after the campaign and election are over. . . . For the recovery

BY L. W. MOFFETT

Resident Washington Editor,
The Iron Age

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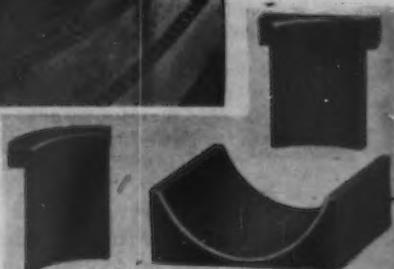
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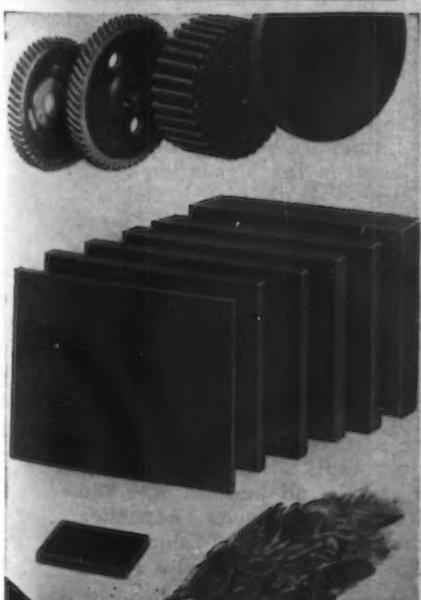


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THE IRON AGE, August 8, 1935—63

now under way, whatever its dimensions and duration, is a heartening thing to the Administration. . . . The rise in steel demand and production, the sharp gain in the market for machinery and other durable goods lines, wherein lies the prospect of largest reemployment, come as refreshing relief and hope. . . . Some New Dealers are not slow to attribute the resurgence of business and industrial activity to the Administration's own far-flung and more or less befuddled efforts.

This attempt of the New Deal to plume itself is, of course, met with sharp challenge both by political opponents and by a big array of economists. . . . They insist it is not because of, but rather in spite of, the New Deal that recovery has begun to show itself distinctly. . . . One New Deal critic has said that the claim of credit by the New Deal for the upswing in business and industry is reminiscent of Aesop's fable about the fly that sat on the axle and boasted of the dust he was raising as the wagon moved along. . . . Other critics contend that the improvement under way is due to confidence created by court decisions knocking out New Deal legislation, notably the Supreme Court decision in the Schechter NRA case. . . . The point is made that this decision, as well as decisions by lower courts in other cases, served notice that the Constitution still stands despite efforts to override it and that, if it is to be amended, it will have to be done in orthodox manner and not by executive fiat.

These decisions undoubtedly have had a restraining influence against wholesale attack on business and industry. . . . The campaign against "bigness in business" is not ended but it has been curtailed. . . . Evidence of this fact is seen in the announcement of Attorney General Cummings that no appeal will be taken in the anti-trust suit instituted by the Department of Justice against Republic Steel-Corrigan, McKinney Steel merger. . . . As related to the steel industry the consolidation of these important units does not reflect "bigness in business" or anything that even approaches monopoly, but it did come well within the scope of the campaign of Government sponsors against "bigness in business" and nothing appeals more to the imagination of would-be trust busters than to mention steel. . . . Entirely ignorant of the industry, they can not conceive of such a thing as a small or medium-sized steel company. . . . In their lexicon it is always an overmastering giant, wholly unacquainted with competition, and its huge profits (this

ought to develop an ironic smile) are made on rails and armaments. . . . The distorted view being what it is, obviously it can be capitalized politically. . . . At that, however, it does not, of course, reflect the view of informed Government sources, and it is believed to be doubtful that the Department of Justice itself was keen for beginning suit against the Republic-Corrigan, McKinney merger. . . . In any event the Attorney General has quite gracefully accepted the opinion of the Federal district court at Cleveland which held for the steel companies and denied the Government's charge that the merger would violate the Clayton anti-trust law.

"This case was brought in order that the agreement should be submitted to judiciary scrutiny," said a statement issued by the Department of Justice. "It was fully tried and, under the facts as found, the court pronounced the proposed transaction legal. In view of this holding as to the particular situation developed at the trial, it has been concluded that an appeal would be unavailing."

No tirade here about a "horse and buggy" decision. . . . Rather the impression was given that the Department of Justice was glad to wash its hands of the case, highly displeasing though it may have been to the brain trusters. . . . Recent court decisions against New Deal legislation conceivably offered added reason for abandoning the idea of appealing to the Supreme Court.

Again, the Death Sentence Defeated

Meanwhile, the New Deal received a smashing defeat for the second time in the House on the "death sentence" clause in Wheeler-Rayburn utility bill. . . . Standing adamant on its previous vote against the clause, the House by a vote of 210 to 155 rejected the motion of Representative Rayburn, Democrat, Texas, chairman of the House conferees, to instruct the House managers to accept the Senate vote in favor of the death sentence clause. . . . This vote was particularly impressive in view of the worse than incredibly stupid lobbying of some utility holding companies including fake telegrams and the whispering campaign about the mental and physical condition of the President. . . . If the mental condition of those inspiring the campaign were one-tenth (or less) as sound as that of the President there would have been no such campaign. . . . As to the physical condition of the President, it might be added, he certainly looks to be in tip-top trim and the country will be convinced

of the fact when given an opportunity to see him on his cross-country trip to be made following the adjournment of Congress, the time of which is anybody's guess, though around Aug. 20 has been commonly named as the mark at which to shoot.

Whispering campaigns against Presidents is an old story, and some of the New Dealers now in office have indulged in the odious pastime and for that reason their outraged sense of decency against the silly sub-rosa campaign directed at President Roosevelt is rather amusing. . . . The chief effect of the campaign, however, has been to injure the standing of utility holding companies generally and not simply the few which richly deserve the odium that attaches to their names. . . . But the House realized that a swallow does not make a summer and voted against the principle of the death sentence clause. They did so despite the completely dumb lobbying activities, far more stupid than were the lobbying activities of Administration representatives, bad as they were. . . . The House also took a shot at the New Deal when it expressed its lively objection to the presence of Ben Cohen, the Administration author of the public utility bill, at conferences on the measure between the House and the Senate. . . . But it must be said for Mr. Cohen that he has shown himself shrewd and able, infinitely superior to opposing lobbyists who, to their regret, have broken into the headlines and made a bad case out of a good cause. . . . But despite this grade of lobbyists and their work, the Senate is expected to agree to elimination of the death clause or accept a modification of some sort that is satisfactory to the House.

After Election, Look for Taxes

Thought it is generally conceded that in the absence of undisguised inflation or repudiation of debts, a broad tax program affecting small as well as big income is inevitable, the present Congress under Administration pressure, is hell-bent on tax legislation of the political, soak-the-rich brand. . . . The broader program will be conveniently left out until after the campaign for whatever party is in power. . . . The present program, uncertain as it is, however, will not be so exclusively soak-the-rich as the Administration had proposed. . . . The House bill reaches down to incomes of \$50,000 and lifts surtaxes on that bracket to 31 per cent, with a range up 75 per cent on all incomes over \$50,000,000, and despite Republican attacks on the bill as being wholly inadequate—it would raise an esti-

mated revenue of \$270,000,000 annually—the bill weathered the storm and continued the "share the wealth" provisions. . . . It did, however, run distinctly counter to the President's wish in another direction. . . . For it would exempt gifts to charity from taxation up to 5 per cent of a corporation's income.

Hearings before the Senate Finance Committee indicate that the Senate might change the House bill considerably, meaning that final enactment of the measure may delay adjournment beyond Aug. 20. . . . But the Senate bill nevertheless will carry the soak-the-rich-share-the-wealth idea. . . . Suggestions to the Finance Committee that taxation legislation be postponed until the next session, beginning in January, of course, got nowhere. . . . Interestingly and significantly, this suggestion was made by a woman, Miss Catherine Curtis, representing Women Investors of America, Inc., in the course of one of the ablest and clearest presentations made before the committee. . . . She urged that the legislation be postponed in order that it might be given more mature consideration. . . . Miss Curtis pointed out that "Nothing would be lost to the Government if Congress took adequate time and gave the citizens of the country sufficient opportunity to understand and express their opinions on these tax proposals and delayed consideration until next January when the budget will be under consideration." . . . She informed the committee that "Mothers of the country are worried, for they are beginning to realize the tremendous burden of debt which will have to be passed on and borne by their children" . . . She went on to say that she knew "that women generally are frightened. They fear matters of great importance are being enacted in a hasty, ill-advised manner. They deplore the fact that tremendous subjects are being rushed through under such conditions as suggest poorly conceived legislation." . . . Of course most members of Congress are in entire accord with Miss Curtis's view but under the Administration lash they fear to adjourn without enacting a purely political tax program. . . . However, Miss Curtis received open approval of her position by two Democratic Senators, King of Utah and Lonergan of Connecticut.

Farmers Out After Tariffs

The embattled farmers are prepared to knock out the protective tariff completely with one single blow. . . . No mere nicking via the reciprocal trade agreement route. . . . The whole system will be

thrown overboard bag and baggage unless court attacks on the AAA are withdrawn. . . . At least a group of Texas farmers have served notice that if the courts invalidate the processing taxes, and a number of courts have said they are unconstitutional, they will go to court and challenge the constitutionality of the protective tariff.

Organized Labor in No Hurry for Wagner Board

DELAY by the White House in setting up the Wagner-Connery Labor Disputes Board is said to be due to the inability of the President to find the personnel he desires. It is reported that the President would like to name Lloyd K. Garrison as chairman of the board, but that Mr. Garrison, former head of the National Labor Relations Board, does not want the appointment, preferring to remain on the faculty of the University of Wisconsin, to which he returned upon resigning from the NLRB.

Doubt as to the constitutionality of the Wagner-Connery act is reported to be the reason for non-acceptance by prospective appointees of service on the board and it is, of course, known the act will be attacked in the courts.

Meanwhile the President has continued the NLRB until Sept. 1. Formerly a three-man board, it now has only one member, Edwin G. Smith. Though without power, it has been continued in order that machinery and a staff for the Wagner-Connery board will be available when the latter is set up. In line with his action in continuing the NLRB the President also has continued the Steel Labor Relations Board and the Textile Labor Board, attaching them to the Division of Mediation in the Department of Labor. It is the supposition that boards for major industries will be established under the Wagner-Connery board and that the steel and textile boards will later be transferred in that capacity to the Wagner-Connery board. However, it is said that it is not contemplated to set up an automobile labor board. The old Automobile Labor Board, set up independently, and not under law, as were the steel and textile boards, was disbanded upon passage of the Wagner-Connery act, and it is said that the Automobile Labor Board will not again be established. It was set up to operate under the proportional representation plan for purposes of collective bargaining and was constantly under fire by organized labor, which finally brought about its abandonment through enactment of the Wagner-Connery law, which provides for majority representation.

Organized labor is not raising any protest about delay in setting up the Wagner-Connery board. On the contrary, it is said organized labor welcomes the delay. This is attributed to the fact that the longer the delay, the more time organized labor will have to use the act for purposes of unionizing industry before the act is tested in the courts.

Subcommittee Balks on Guffey-Snyder Coal Bill

IF it follows recently recurring precedents, the United Mine Workers of America may have to postpone the big coal strike for the fifth time. For the Guffey-Snyder coal nationalization bill may not be enacted at the present session of Congress, and if not passed at the current session it is doubted that it will ever pass. This despite the Presidential mandate that it be passed at the present session, telling the House Ways and Means Committee that "I hope your committee will not permit doubts as to constitutionality, however reasonable, to block the suggested legislation." Because of the Administration promise to have the bill enacted, the United Mine Workers now have postponed the strike until Sept. 16, and the union is no doubt duly grateful for Administration intervention, for it is questionable if the union is at all keen to call a strike, threatened to enforce new wage and hour demands.

However lightly the question of the bill's constitutionality may rest with the White House and the union, it is proving a stumbling block in Congress. This was clearly indicated by the action of the subcommittee of the Ways and Means Committee which considered this bill. The subcommittee's misgivings as to the bill's constitutionality was heightened when the Attorney General refused to pass on the point when he was called before the subcommittee. Under this circumstance, the subcommittee recently reported the bill back to the full committee without recommendation. It is now believed that full committee may hold up the bill and not report it to the House, if it reports at all, until the session is so near ended that it can't be passed.

This statement is made with reservation, for once organized labor turns the heat on Congress, as it has done so frequently and successfully, it can get some queer legislation on the statute books. And it may resort to that form of pressure and get the Guffey bill enacted into law and headed for the Supreme Court. If it does not, the alternative, of course, is either to postpone the strike once more or really to proceed with it.

Washington Encouraged By Business Improvement

WASHINGTON, Aug. 6.—The business improvement under way is a source of real gratification to Washington. The hope is that the long, dreary, discouraging six-year haul to recovery is near an end. False starts have been made previously, however, as in the summer of 1932, and are a warning against excessive confidence that the new stimulus is a genuine and enduring upswing. But there is a belief that it has the soundest foundation toward recovery that has been laid since the depression. Coming from Washington, there is generally a political color as to the whys and wherefores of the expansion in a wide field, including steel, metal-working machinery, retail and wholesale lines.

Avoiding this political flavor, economists have pointed to factors which, they contend, are playing an essential part in the current recovery. For most of them it has developed somewhat earlier than they had expected. One economist who some time ago predicted a "defensive" economic recovery this fall said it had "jumped the gun" by several months. By defensive recovery he means the enforced purchase of modern equipment and use of modern methods of production in order that a manufacturer can lower costs and otherwise meet competitive conditions. It is to this that he ascribes much of the buying of machine tools, installation of modern rolling mills and replacement of old type of production with new types. To his mind, the most cheering development in the steel trade is the spread of miscellaneous demand coming from private, not Governmental, sources. While no large single lots are involved, when accumulated they mount up into good-sized tonnages and even more importantly reflect not only ability to buy but a growing desire to buy. This attitude is taken, of course, without disregarding the importance of automobile steel demand, estimated to constitute about 25 per cent of the total, or the spread in demand of farm equipment makers, railroads, etc.

Influences at Work

As pictured by economists, there are a number of important influences at work which look toward recovery. To point out some of these they explain: Residential construction is up 50 per cent over the first half of last year. The railroads have adjusted operating costs

to a point where added traffic will spell profits and, with renewed building, will be called upon to carry more materials, steel, cement, brick, sand, etc. Getting into black, they will come into the market more freely for requirements—rails, steel lines generally, cars, and locomotives, purchasing modern types of equipment, and modern metal-working machinery. Farm purchasing power has been substantially increased now that agricultural product prices are nearly on a parity, using the Department of Agriculture's index of 1910-14, with industrial prices generally. In some cases they exceed this parity. Much of this improved position is attributed to AAA money, and if processing taxes are knocked out by the courts it is therefore expected that there will be a halt in the rising demand for agricultural implements. An encouraging indicator is the rise in land values.

There is also abroad, it is declared, a feeling that, regardless of legislative enactment, either bad or good, the country cannot wait longer for prosperity. Money has lain idle, "going to rot," as it was put, and capital, long ready to lend at low rates on good security, is finding both industry and the individual more anxious to borrow and invest. Some of the investment is ascribed to fear of inflation, growing out of tremendous Government expenditures and the absence of any move to balance the budget. It is seen that the industrial pump can't continue much longer to be primed on borrowed money and that, hurt as it may in the way of taxation from the little to the big income, a definite, certain move to balance the budget must be made soon if inflation is to be avoided. But it is contended that the bulk of investment is based on the belief of its soundness and competitive necessity if returns are to be netted.

Fear of Inflation

There are, of course, many potential borrowers who are hesitant, but it is maintained that if the price trend continues to rise many of these will come into the market for money to use for purchases and investments. In this connection there already is talk that care must be taken to avert a headlong rush of business, followed by dangerous commodity inflation. For the present, however, such a prospect in the early future is held to be unlikely.

An outstanding benefit from increased business and industrial activity obviously would be the reduction of the enormous Federal relief rolls, thus cutting down Government costs and increasing purchasing power on a widespread scale. Talk of purging the relief rolls no doubt has encouraged business, yet the fact is that progress made in this direction under the \$4,000,000,000 work relief fund has been painfully slow. But despite the impetus toward recovery, the fact remains there are today on the relief rolls some 3,800,000 families, virtually the same number as one and two years ago. It represents a population of some 20,000,000. The answer has been given that even in normal times many workers are engaged only part time, and that necessarily during a depression work is, of course, more casual. Then, too, many on relief are afraid to get off, even if they have jobs, and manage to draw undeserved relief checks. Further, of course, many on relief don't want to and will not work if they can hang on to Government doles, as evidenced by the unsatisfied demand for farm hands. As one economist said, there are so many on relief, the vast majority of whom are deserving and to be considered sympathetically, that the dole has become accepted as a matter of course. Some beneficiaries, who hitherto would consider it a lowering of self-respect to accept a dole unless it was a matter of life and death, now no longer "give a damn" and others even insist on it in preference to working when offered jobs.

The Administration, of course, is endeavoring to remove 3,500,000 "employables" from the dole, but because of the vastness of the undertaking is making slow progress, yet hopes to do so by November. There is nevertheless a virtual admission that transfer of such a large number to work, on the Government payroll of course, cannot be accomplished in that time and that the Government is bound to be called upon to maintain many employables indefinitely. Some States which are strong for State's rights when it doesn't cost them anything to maintain that principle are thoroughly reluctant to take over these idle employables by assessing sales taxes or taking other courses that their legislatures and governors think would be political dynamite. They often cuss Washington for intruding on their preserves, but they are ready enough to let the Federal Government carry the financial burden and accept the political repercussion. The problem definitely is related to recovery.

Walsh Bill May Prevent Foreign Steel Dumping

WASHINGTON, Aug. 6.—The Walsh bill requiring bidders on work for the Government or under Government loans and grants to maintain code wages and hours may be called up in the Senate this week. Through tentative agreement between Senator Walsh, Democrat of Massachusetts and Majority Leader Robinson, it is to follow the copyright bill, now before the Senate.

As is evident from an abstract published in *THE IRON AGE* of Aug. 1, page 47, the bill carries broad powers over industry. On the other hand, it has been cited as a protection against the PWA order requiring the purchase of foreign supplies where their prices are 15 per cent less than domestic bids. The point has been made that inasmuch as foreign makers operate under wages much less than American wages, foreign steel and other materials would be automatically barred. The PWA order has been the source of vigorous protest from steel makers but has been strongly upheld by the President and Harold L. Ickes, public works administrator.

The legislation was asked by the President when the Supreme Court knocked out the NRA in the Schechter poultry decision. It was asked for as an alternative for NRA as to wages and hours inso-

far as they affected work done through the use of Government loans or grants. It was also the hope of the Administration that application of code wages and hours to such contracts would be an influence in maintaining them as to private operations.

The bill makes no dividing line between intrastate and interstate commerce because, unlike NRA, it does not attempt to regulate interstate commerce. For this reason it is the view of legal authorities that the Walsh bill probably could not be attacked on grounds of constitutionality since the Government has the power to name the terms under which work on Government contracts, loans and grants may be done.

Belief that the bill will be passed is heightened by the fact that it is not only Administration-sponsored but it is also strongly supported by organized labor.

Regardless, however, of the threat of use of foreign steel and other foreign supplies under the PWA order and the power given the President under the Walsh bill, it is still doubted that foreign materials will be purchased. It has been pointed out that both union and non-union labor, together with industry in this country, with its widespread unemployment, would strongly resent use of im-

ported materials. There is no assurance, of course, that foreign material will not be purchased, but if it is purchased it is thought it would be only in small quantities, perhaps for the purpose of bringing down prices of domestic materials used in construction work. Actually, it is reported that the latter is one of the real purposes of the PWA order.

Republic, Corrigan, Merger to Consummate

FOLLOWING receipt of press dispatches that the Department of Justice had determined not to appeal from the decision of the Federal District Court upholding the proposed Republic Steel Corp.-Corrigan, McKinney Steel Co. merger, T. M. Girdler, chairman and president of Republic, and Donald B. Gillies, president of Corrigan, McKinney, said: "We are gratified with the position taken by the department. Steps will be taken immediately looking to the consummation of the merger."

Thirteen Ships to Take 31,000 Tons of Steel

APPROXIMATELY 31,000 tons of steel will be required for the 13 Naval vessels on which bids were opened on Wednesday and which will be built in private yards. The remaining 11 vessels of the 24-ship building program will be allocated by the Secretary of Navy among the various Navy yards, and will require about 15,000 tons of steel, making a total of some 46,000 tons for the entire program.

The 13 ships on which bids were taken are one light cruiser, one aircraft carrier, eight torpedo boat destroyers and three submarines.

Steel estimates are as follows:

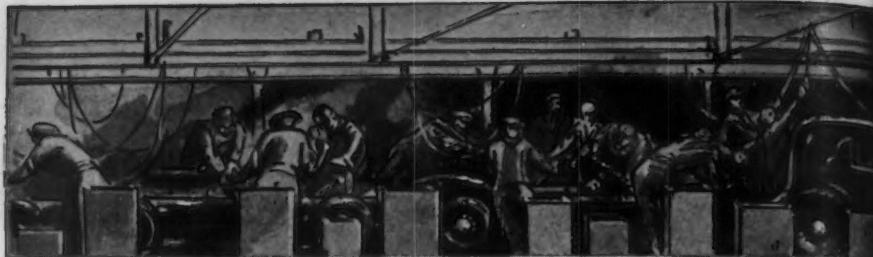
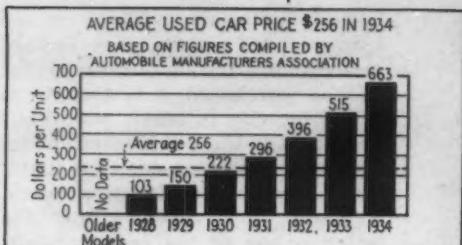
	Plates	Shapes	Steel Bars
Light cruiser	4200	2100	700
Aircraft carrier	9000	4500	1500
Eight destroyers	4320	2160	720
Three submarines	1080	540	180
	18,600	9300	3100

Detroit Scrap Prices Advance

DETROIT, Aug. 6.—Bullishness of dealers rather than consumer buying has boosted prices on almost all scrap items 25c. to 50c. a ton. With steel operations expanding and the volume of scrap likely to come out of the automobile industry in the next 60 days below normal, dealers foresee still higher prices.



LORENZ IVERSON (right), president of Mesta Machine Co., Pittsburgh, receiving the president's trophy of the Pennsylvania Manufacturers' Association which was awarded for the best safety effort made during the past year. The presentation was made during the company's annual picnic at Kennywood Park. John M. Flynn, president of the Association (left) made the presentation.



THIS WEEK ON THE

Car Sales Outlook Is Good; Volume Of Steel Buying Is Encouraging

DETROIT, Aug. 6.

DOG days usually signify intense heat and lassitude and an absence of strenuous activities. Detroit has had intense heat, but has been so busy filling automotive orders that lassitude hasn't had a chance to catch hold. Cars still are coming off assembly lines at most plants at a rate which would have brought satisfying smiles to the faces of motor car executives in the peak months of two and three years ago. Today this daily volume is taken as a matter of routine.

Just how far production has bounded ahead of 1934 is shown by the fact that before August is ended the number of cars built since Jan. 1 will have passed the total—2,869,963 units—for all of last year. Normally there is a well-defined pause between the completion of work on one model and the start of operations on a new model, but this year some manufacturers will do little more than hesitate. The strong retail demand for current models has prolonged 1935 runs. Early estimates for July, for example, put new passenger car sales at 5000 more than in June. This is in line with the contra-seasonal trend a year ago, when 5142 more new passenger cars were sold in July than in June. In 1933 the margin in July over June amounted to 11,470 units.

The surging passion of the public for buying new cars when the temperature is pushing up against the 100-degree mark means much to the industry in the form of added profits. The longer car production is continued on present models, the lower is the cost per car built this year and the greater is the margin

of profit. The postponement of work on 1936 cars, therefore, brings no tears to management's eyes.

Optimism for Coming Months

Unbounded optimism pervades the industry as to retail sales prospects the remainder of the year. The general and unexpected business recovery, renewed purchasing power of the farmer and the stimulation of new models to be introduced in the fall are factors contributing to this feeling of confidence. Statistical evidence also is at hand to support this view. During the August-December period of 1934 over 36 per cent of the year's retail sales were made. The proportion the preceding year for the same months was 42.9 per cent. The average for the last six years is 33.2 per cent. This, incidentally, was without benefit of new models, which should act as a sales tonic in the final quarter of 1935.

Chevrolet last year had the unprecedented experience of selling more cars in the final half of the year than in the first half, a situation induced by production delays early in 1934. Chevrolet's situation today is much like that of a year ago. What with inability to secure bodies in sufficient quantities for the first three months of 1935 and with the strike at Toledo tying up operations in April and May, Chevrolet only recently hit its normal stride. It is a pretty safe bet that in the last six months of this year it will repeat its performance of last year and attain a larger sales volume than in the first half. Chevrolet dealers in the United States sold 312,164 passenger cars in the January-June period this year.

Not to be ignored as a stimulant to new car sales is the lifting of the NRA ban on allowing liberal trade-ins on used cars. It is difficult to calculate what part this has played recently in keeping sales at high levels, but it undoubtedly has enabled companies building cars in the higher price brackets to do a better business. Although dealers generally no longer are willing to trade away all of their profits to secure new car sales, nevertheless prospective customers who have shopped around once again find that they can do some "horse-trading."

Few Changes Coming

A check-up of 1936 changes confirms earlier impressions that they will be few in number. Whatever money has been spent on new equipment has largely gone for expansion of productive capacity and cost-saving purposes. In a few cases, of course, shifts in materials and development of new car features have called for machinery purchases. Notable examples are the preparation of one company to use an alloy piston of new design and the expenditures of Chevrolet for the machining of parts for hydraulic brakes, which, it is reliably stated, will be standard equipment on its 1936 cars.

Detroit has been swept by a flood of reports which, in nine cases out of ten, have no foundation. Stories have gone the round that Chevrolet will have both a six and an eight. Such tales are untrue. For one thing, Chevrolet isn't taking a chance on doing anything the coming year which might result in another painful production delay. It intends to paddle its 1936 canoe close to shore.



ASSEMBLY LINE

Another story had Chrysler ready to sponsor a front-drive car. This, of course, is hardly worth denying because it is so far-fetched that those familiar with the industry laugh at its absurdity. Because C. L. Cummins, at Columbus, Ind., is reported about to start limited production of a Diesel-engined passenger car, people are whispering that General Motors and other long-established manufacturers have well-defined plans for introducing Diesel-powered vehicles. It can positively be stated that this is the bunk. It is scarcely a secret that General Motors executives have not yet been sold on the idea that small Diesel engines have been perfected to the point where they are suitable for general automotive use. What is more many engineers believe that the Diesel never will be employed on a mass scale unless cars finally are stepped up in power where they will be equipped with 200-hp. motors.

There has been much loose talk also about the possibility of air-conditioning automobiles. Because two companies — General Motors and Chrysler — have divisions engaged in air-conditioning operations, the uninformed are likely to jump to the conclusion that the application of air-conditioning, like prosperity, is "just around the corner." The truth is, however, that it is as far around the corner as prosperity was in about 1931. A prominent automotive executive points out that air-conditioning would be necessary only a few days out of a year. He cannot believe that motorists are ready to substitute a system which would require their windows to be closed, no matter how enticing the outside weather might be. Anyway, the cost, so far as one can see ahead, would be prohibitive. One would be foolhardy to say that cars never will be air-conditioned, but the day when they are likely to be isn't yet in sight.

Car manufacturers are planning to lengthen their work week the

BY BURNHAM FINNEY
Detroit Editor, The Iron Age

coming year, since no code restrictions are now in the way. The average week during 1934 was around 33 hours. While the code was in effect, a serious burden was imposed on the industry during emergency periods when longer hours could not be worked. This restriction of working hours was a major source of dissatisfaction among automobile workers and contributed much toward labor strife.

Ford is engaged in constructing a new small plant at Northville, Mich., to build all valves for V-eight cars and trucks. When it is finished, near the end of the year, the present factory, which has been in operation since 1920 and is the first of Ford's village industries, will be razed. To provide part of the water power for the new plant the River Rouge will be dammed and an overshot wheel, run by water, installed. With the completion of the new Northville plant, Ford will have six modern small factories along the Rouge. The plant at Plymouth makes taps and dies; Waterford, gages; Phoenix, generator cutouts and switches; Nankin Mills, screw machine parts and Newburg, drills. Two other small Ford plants are on the Huron River, one at Ypsilanti, which makes starters and generators, and the other at Flat Rock, for the manufacture of lamps.

Preparing to manufacture a new small car in the low-priced field, Fiat is this week completing the purchase of machine tools in the United States totaling around \$400,000. The equipment which is for the machining of a four-cylinder engine is for delivery at the earliest possible date. Orders also have been placed in this country for special presses and heat-treating furnaces. All expenditures have been made through the company's

American office in the David Stott Building, Detroit.

Pig iron shipments to automotive foundries in Michigan in July were 30 to 35 per cent better than in June and August is running ahead of July. Chevrolet is planning on assembling around 100,000 cars this month and a large number of current models in September. It is expected that there will be only a few days interval next month between the end of the 1935 run and the beginning of manufacture of the new jobs.

Pontiac and Oldsmobile have about completed operations on this year's models and their assembly lines will be down until early in September. It is probable, however, that production of parts will get under way late this month.

Automotive steel purchases have been of sizable volume. Chevrolet at Flint is completing this week the allocating of orders for flat-rolled steel estimated to be for 80,000 to 90,000 cars. Fisher body has given substantial releases of steel for 1936 bodies principally for delivery to its Cleveland plant. This would seem to dispose of the discussion of whether Fisher intends to continue operations at Cleveland where considerable labor trouble has occurred. Chrysler and Packard have bought steel the past week, the latter specifying rush deliveries. Hudson is expected in the next week or two to place initial steel orders for its coming models. Ford is believed to have placed only a small proportion of the tonnage for which it recently inquired and probably will not make further purchases for at least two weeks.

Electric Auto-Lite Co., Toledo, has acquired the Alemite Die Casting & Manufacturing Co. with plants at Chicago and Woodstock, Ill., and also the Central Brass & Fixture Co. at Springfield, Ohio. It is reported to have closed large contracts for die castings with Chrysler Corp. and with several independent car manufacturers.

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July Pig Iron Output Dropped 5.2 Per Cent

PRODUCTION of coke pig iron in July totaled 1,520,263 gross tons, compared with 1,552,514 tons in June.

The daily rate in July, at 49,041 tons, decreased 5.2 per cent from the June rate of 51,750 tons.

There were 95 furnaces in blast on Aug. 1, making iron at the rate of 50,635 tons a day, against 91 furnaces on July 1, making iron at the rate of 49,180 tons a day. Eight furnaces were blown in during the month and four were blown out or banked. The Steel Corporation blew two in and took one off blast, independent steel companies blew four in and blew out or banked one, and two merchant furnaces were put in operation and the same number blown out or banked.

Among the furnaces blown in are the following: One Monongahela, National Tube Co.; one Gary, Illinois Steel Co.; one Aliquippa, Jones & Laughlin Steel Corp.; one River, Corrigan, McKinney Steel Co.; one Madeline, Inland Steel Co.; one Ford, Ford Motor Co.; one Troy, Troy Furnace Corp., and one City, Sloss-Sheffield Steel & Iron Co.

Furnaces blown out or banked included one Fairfield, Tennessee Coal, Iron & Railroad Co.; one Hubbard, Youngstown Sheet & Tube Co.; one Pioneer, Republic Steel Corp., and one Woodward, Woodward Iron Co.

Production by Districts and Coke Furnaces in Blast

Furnaces	Production (Gross Tons)		August 1		July 1	
	July (31 Days)	June (30 Days)	Number in Blast	Operating Rate, Tons a Day	Number in Blast	Operating Rate, Tons a Day
<i>New York:</i>						
Buffalo	109,772	94,019	6	3,540	6	3,135
Other New York and Mass.	6,248	5,667	6	365	1	190
<i>Pennsylvania:</i>						
Lehigh Valley	29,521	34,250	3	950	3	1,140
Schuylkill Valley	12,309	12,241	1	395	1	410
Susquehanna and Lebanon Valleys	12,474	13,880	1	400	1	465
Ferromanganese			0	0	0	0
Pittsburgh District	279,481	290,874	17	9,895	15	8,360
Ferro. and Spiegel	12,706	14,361	2	410	2	495
Shenango Valley	18,782	19,909	1	605	1	665
Western Pennsylvania	25,517	37,950	2	825	2	1,265
Ferro. and Spiegel	5,950	5,638	1	190	1	190
Maryland	57,702	69,806	3	1,860	3	2,325
Wheeling District	114,840	107,964	6	2,705	6	3,515
<i>Ohio:</i>						
Mahoning Valley	172,372	152,514	8	5,215	9	5,115
Central and Northern	158,162	161,314	11	5,375	10	5,375
Southern	28,999	27,346	2	935	2	910
Illinois and Indiana	285,159	304,499	15	10,385	13	9,360
Mich. and Minn.	57,788	52,618	4	1,865	3	1,755
Colo., Mo. and Utah	19,904	19,971	2	640	2	665
<i>The South:</i>			0	0	0	0
Virginia Ferromanganese and spiegel			0	0	0	0
Kentucky	2,851	2,920	1	90	1	95
Alabama	24,866	24,290	2	800	2	810
Tennessee	84,860	99,983	5	2,190	7	2,940
Total	1,520,263	1,552,514	95	50,635	91	49,180

Daily Average Production of Coke Pig Iron

	Gross Tons			
	1935	1934	1933	1932
January	47,656	39,201	18,348	31,380
February	57,448	45,131	19,798	33,351
March	57,098	52,243	17,484	31,201
April	55,449	57,561	20,787	28,430
May	55,713	65,900	28,621	25,276
June	51,750	64,338	42,166	20,935
1/2 year	54,138	54,134	24,536	28,412
July	49,041	39,510	57,821	18,461
August		34,012	59,142	17,115
September		29,935	50,742	19,753
October		30,679	43,754	20,800
November		31,898	36,174	21,042
December		33,149	38,181	17,615
Year		43,592	36,199	23,733

Production of Coke Pig Iron and Ferromanganese

	Gross Tons		Ferromanganese†		
	Pig Iron*	1935	1934	1935	1934
January	1,477,336	1,215,226	10,048	11,703	
February	1,508,552	1,263,673	12,288	10,818	
March	1,770,028	1,619,534	17,762	17,805	
April	1,663,475	1,726,851	18,302	15,413	
May	1,727,095	2,042,896	17,541	10,001	
June	1,552,514	1,930,133	12,961	10,007	
1/2 year	9,799,000	9,798,813	88,902	75,842	
July	1,520,263	1,224,826	13,175	10,188	
August		1,054,382	...	8,733	
September		898,043	...	7,100	
October		951,062	...	9,830	
November		956,940	...	8,184	
December		1,027,622	...	4,563	
Year		15,911,188	...	124,190	

*These totals do not include charcoal pig iron. The 1933 production of this iron was 32,941 gross tons.

†Included in pig iron figures.

Merchant Iron Made, Daily Rate

	Tons			
	1935	1934	1933	1932
January	3,926	7,800	2,602	6,256
February	6,288	7,071	2,863	7,251
March	7,089	7,197	2,412	7,157
April	8,799	8,838	1,908	5,287
May	8,441	9,899	3,129	4,653
June	7,874	9,499	4,088	6,090
July	8,644	7,880	6,783	3,329
August		6,043	7,756	3,070
September		4,986	10,034	3,213
October		5,765	8,634	4,286
November		6,610	7,639	4,435
December		4,399	8,358	3,674

Licensing Bill Introduced

WASHINGTON, Aug. 6.—Senator Joseph C. O'Mahoney, Democrat of Wyoming, formerly first assistant postmaster general under Postmaster General James A. Farley, on Monday introduced a bill to license industries engaged in interstate commerce. Stringent in its requirements, including limitations of the amount of dividends that can be paid to stockholders, the measure has been proposed by the American Federation of Labor. Organized labor has said it is intended to replace the NRA, but its provisions are much more sweeping than those of the recovery act. While there is doubt that it will be enacted, this is a matter of speculation only, since enactment of radical legislation has become the rule rather than the exception. Moreover, its support by organized labor gives it strength it obviously would not otherwise have.

Iron Age Index

AGAIN of one-tenth of a point occurred last week in the capital goods weekly index to bring it to its present level of 57.8. This compares with a figure of 50.2 for a year ago and 60.8 for two years ago. The automobile component, which has been abnormally active of late, finally reversed its course and declined. Production in this field last week was 13,179 cars fewer than during the preceding week, according to Cram's Reports, Inc. In the seasonally adjusted index this amounted to a decline of about 12 per cent, whereas seasonal standards called for only an approximate 7 per cent drop in the unadjusted index. On the other hand, the steel index continued its upward trend to establish a seasonally adjusted figure 9 per cent above last week's, despite the fact that, without adjustment, this figure should have been rough-

The Iron Age Weekly Index

Numbers of Capital Goods Activity

(1925-27 = 100)

Last week (est.)	57.8
Preceding week (rev.)	57.7
Same week last month	50.4
Same week 1934	50.2
Same week 1933	60.8
Same week 1932	33.7
Same week 1931	61.1
Same week 1930	83.8
Same week 1929	125.7

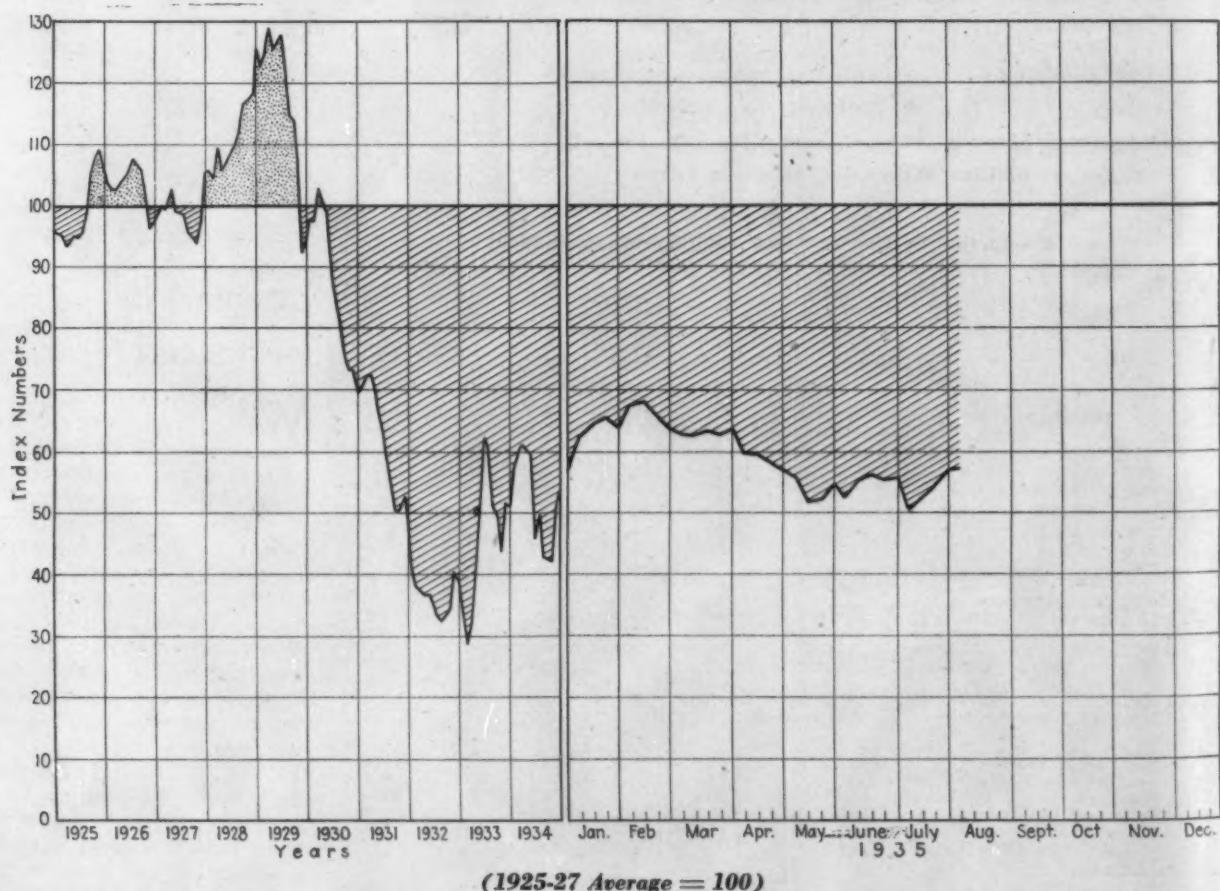
cent gain in the adjusted index for industrial activity in the Pittsburgh district.

With the indices for lumber shipments and construction contracts practically unchanged, the net effect of last week's movement in the other series was to cancel one another out. None-the-less the sustained pace of operations in the steel industry must be stressed as indicating that business among a wide and diversified group of its customers is picking up.

Sharing the Wealth

One of the appealing ideas which has become widely popular during the depression, especially since March, 1933, is that small incomes are "spent" and large incomes are "saved." Starting with this assumption, the redistribution of wealth becomes not only socially

ly 3 per cent lower than the preceding week's unadjusted figure. There was also an estimated 3 per



The Iron Age Index of Capital Goods Activity. The years 1925 to 1934 are plotted by months, the current year by weeks.

Slightly Higher

desirable but economically necessary in order to keep factory wheels turning and labor employed.

A few moments' consideration should show that this idea, like many others which intrigue the imagination of the unthinking voter and arouse the cupidity of the unscrupulous politician, is based on an obvious fallacy. Whatever disposition the individual may make of his income, except by hoarding it in cash, it is almost impossible to prevent the money from finding its way eventually, and usually very promptly, into the purchase of goods and the employment of labor. The surplus income of the millionaire, which is saved in the form of an investment in mortgages or Government securities, is paid out by the borrower for wages and materials just as surely as the direct expenditures of the family of modest income. The real distinction between "spendings" and "savings" is that the former are spent largely for the products of the consumption goods industries, which are already relatively prosperous, while the latter are spent for the products of the

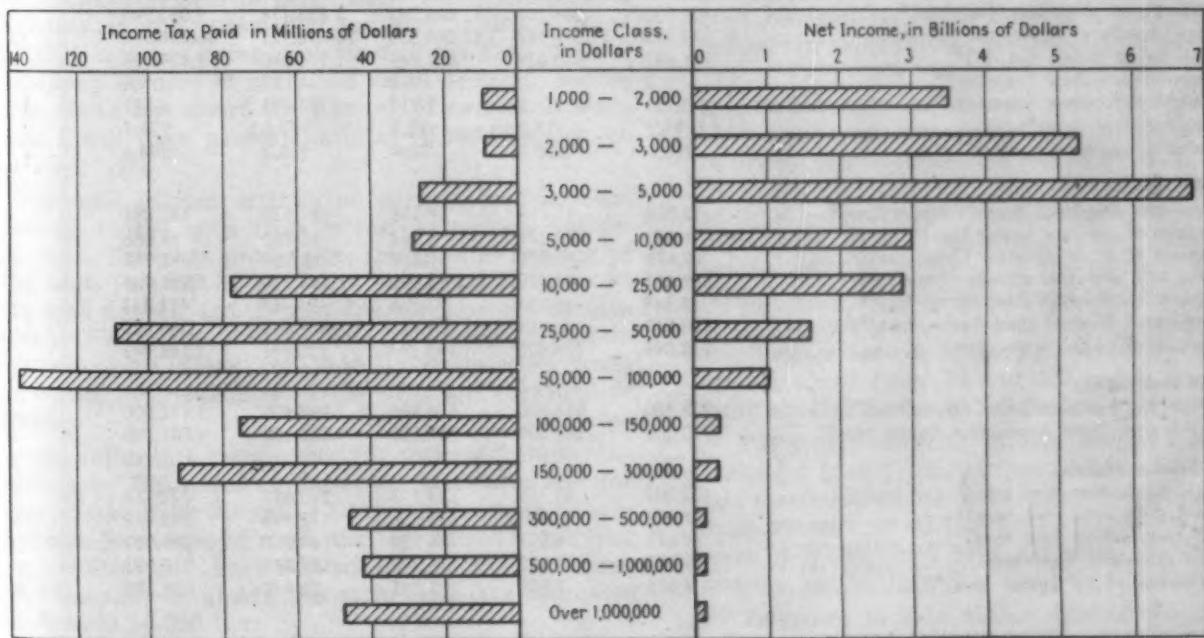
capital goods industries, which are still severely depressed.

Thus the latest Administration "share-the-wealth" tax proposal cannot be expected to increase the aggregate amount of purchasing power but merely to divert it from one channel of expenditure into another. Still more preposterous is the claim that additional revenues to be obtained from higher taxes on very large incomes can go far toward either redistributing wealth or reducing the deficit. Even with substantial business recovery the number of income tax payers, and the rates on smaller incomes, will have to be greatly increased if any progress is to be made toward balancing the budget in the near future.

Some idea of the sources of income and possible tax yields can be obtained from the chart at the bottom of the page, which is based on Treasury reports for the year 1924, when tax returns were made by 7,369,788 persons, or twice as many as in any of the past five years, and total net income reported by those paying income tax was \$25,656,153,000, a larger amount than for any other year in

history. In that year the great bulk of the reported income was received by those in the lower income classes, while the major portion of the tax, even with lower rates on large incomes than at present, was paid by those in the higher income classes. The aggregate net income reported by persons earning more than \$25,000 was only \$3,910,000,000, or 15 per cent of the total, but this group of taxpayers, numbering less than 70,000, paid \$550,000,000, or 78 per cent of the total income tax receipts of \$704,265,000 collected in that year.

Even with much higher rates it is difficult to see how large incomes can be made to yield enough revenue to go far toward balancing the budget, much less reducing the public debt. Even if all personal net incomes in excess of \$100,000 per year were confiscated, which would be a far more drastic share-the-wealth program than either President Roosevelt or Senator Long has proposed, the total yield in the prosperous year 1924 would have been only \$665,000,000, or a sum equal to less than one-fifth of the current Federal deficit.



Net Income and Tax Paid by Individuals in 1924

Source: *Statistics of Income for 1932, U. S. Treasury Department*

Current Metal Working Activity Statistically Shown

These Data Are Assembled By THE IRON AGE from Recognized Sources And Are Changed Regularly As More Recent Figures Are Made Available. Boldface Type Indicates Changes This Week

	June, 1935	May, 1935	June, 1934	First Half, 1934	First Half 1935
Raw Materials:					
Lake ore consumption (gross tons) ^a	2,198,757	2,466,585	2,721,449	13,723,119	14,341,513
Coke production (net tons) ^b.....	.....	2,850,236	3,049,700	17,589,203	.....
Pig Iron:					
Pig iron output—monthly (gross tons) ^c	1,552,514	1,727,095	1,930,133	9,798,313	9,799,000
Pig iron output—daily (gross tons) ^c	54,138	55,713	64,388	54,134	54,138
Castings:					
Malleable castings—production (net tons) ^d	27,548	34,729	28,340	214,041	231,897
Malleable castings—orders (net tons) ^d	25,668	31,136	24,449	207,647	220,228
Steel castings—production (net tons) ^d	27,665	30,646	50,286	249,484	180,925
Steel castings—orders (net tons) ^d	30,257	29,083	41,537	273,550	182,370
Steel Ingots:					
Steel ingot production—monthly (gross tons) ^e ..	2,230,893	2,635,857	3,059,483	16,402,554	16,024,691
Steel ingot production—daily (gross tons) ^e	89,236	97,624	117,672	105,145	103,385
Steel ingot production—per cent of capacity ^e ..	40.31	44.10	53.44	47.75	46.70
Employment in Steel Industry:					
Total employees ^f	416,732	421,470	455,966	429,834	419,247
Total payrolls (thousands of dollars) ^f	\$41,903	\$46,494	\$49,467	\$258,401	\$269,592
Average hours worked per week ^f	31.4	33.9	36.2	34.1	33.8
Finished Steel:					
Trackwork shipments (net tons) ^g	4,210	4,228	6,184	28,647	21,575
Sheet steel sales (net tons) ^g	128,957	149,725	114,855	1,185,644	1,144,985
Sheet steel production (net tons) ^g	143,309	191,507	199,438	1,249,231	1,225,891
Fabricated shape orders (net tons) ^g	117,477	55,533	122,603	595,188	490,402
Fabricated shape shipments (net tons) ^g	85,568	78,810	104,041	462,071	479,439
Fabricated plate orders (net tons) ^g	17,914	17,630	27,395	138,833	99,462
Reinforcing bar awards (net tons) ^g	14,985	12,080	21,315	110,885	112,755
U. S. Steel Corp. shipments (tons) ^h	578,108	598,915	985,337	3,678,895	3,553,999
Ohio River steel shipments (net tons) ^h	80,620	78,106	83,718	336,432	408,648
Fabricated Products:					
Automobile production, U. S. and Canada ⁱ	377,065	385,486	321,970	1,796,423	2,373,471
Construction contracts, 37 Eastern States ⁱ	\$148,005,200	\$126,718,600	\$127,055,400	\$854,101,900	\$696,685,300
Steel barrel shipments (number) ^j	501,730	554,102	696,349	3,826,114	3,032,964
Steel furniture shipments (dollars) ^j	\$1,137,173	\$1,214,163	\$1,045,539	\$5,836,711	\$6,898,572
Steel boiler orders (sq. ft.) ^j	391,497	640,824	359,749	1,916,040	2,674,105
Locomotive orders (number) ^j	3	2	3	83	16
Freight car orders (number) ^j	5,151	2	1,217	23,383	6,583
Machine tool index ^j	91.1	73.3	35.3	†42.6	†76.7
Foundry equipment index ^j	100.1	100.7	70.4	†68.3	†94.6
Foreign Trade:					
Total iron and steel imports (gross tons) ^k	33,208	47,719	24,858	167,638	182,891
Imports of pig iron (gross tons) ^k	6,583	23,174	5,168	65,386	53,486
Imports of all rolled steel (gross tons) ^k	19,678	18,939	11,818	55,980	92,972
Total iron and steel exports (gross tons) ^k	289,687	286,599	219,406	1,253,170	1,595,934
Exports of all rolled steel (gross tons) ^k	65,319	65,255	71,965	494,767	411,313
Exports of finished steel (gross tons) ^k	60,643	60,487	61,425	429,543	365,105
Exports of scrap (gross tons) ^k	215,098	209,425	143,383	738,848	1,115,942
British Production:					
British pig iron production (gross tons) ^l	529,300	558,900	514,900	2,898,400	3,172,000
British steel ingot production (gross tons) ^l	770,000	853,300	757,500	4,507,300	4,801,200
Non-Ferrous Metals:					
Lead production (net tons) ^m	33,002	37,358	33,218	213,697	192,116
Lead shipments (net tons) ^m	26,978	32,341	28,276	178,444	195,419
Zinc production (net tons) ^m	34,677	34,597	25,160	184,008	209,987
Zinc shipments (net tons) ^m	29,393	35,652	30,217	189,896	215,083
Deliveries of tin (gross tons) ^m	4,615	3,950	3,845	22,445	28,390

*Preliminary. †Three Months' Average.
 Sources of figures: *Lake Superior Iron Ore Association; ^aBureau of Mines; ^bTHE IRON AGE; ^cBureau of the Census; ^dAmerican Iron and Steel Institute; ^eNational Association of Flat-Rolled Steel Manufacturers; ^fAmerican Institute of Steel Construction; ^gUnited States Steel Corp.; ^hUnited States Engineer, Pittsburgh; ⁱWhen preliminary, from Automobile Manufacturers Association—Final figures from Bureau of the Census; ^jF. W. Dodge Corp.; ^kRailway Age; ^lNational Machine Tool Builders Association; ^mFoundry Equipment Manufacturers Association; ⁿDepartment of Commerce; ^oBritish Iron and Steel Federation; ^pAmerican Bureau of Metal Statistics; ^qAmerican Zinc Institute, Inc.; ^rNew York Commodity Exchange.

Steel Production Registers Fifth Consecutive Weekly Increase

Output Reaches 47 Per Cent—Scrap Prices Continue to Advance—Rise In Demand From Machinery Industries Is Accelerating

In its fifth consecutive advance since Independence Day week, steel production has risen to 47 per cent of capacity. The gain over a week ago—one point or slightly more than 2 per cent—is the smallest since the present upturn began and there are indications that production may soon level off.

Any cessation in the advance, however, is expected to be temporary, to be followed by renewed expansion in September and October. Belief is becoming widespread that the current recovery in steel output is distinct from the abortive rebounds of previous depression years and really represents the beginning of a long pull out of hard times. This view finds its basis in the absence of speculative buying, the astonishing growth of miscellaneous demand, sustained retail sales of automobiles, accumulating activity in capital goods and, of course, the pronounced buoyancy of scrap, the most sensitive barometer of the steel trade.

Scrap prices have undergone further advances in virtually all market centers. Rises in heavy melting steel prices at Chicago and Philadelphia have lifted THE IRON AGE scrap composite from \$11.58 to \$11.83 a ton, its highest level since the third week in February.

CHANGEOVERS to new models are getting under way in the automobile industry, although runs on 1935 cars are being prolonged in the case of some producers because of sustained retail demand. Before this month has closed the number of cars built since Jan. 1 will have passed the total—2,869,963—for all of 1934.

Despite belated activity on present models, steel releases to the mills from motor car makers are declining. Tin plate production, though still holding at the high rate of 82 per cent as compared with 88 per cent a week ago, is also due for seasonal curtailment. The interruption in motor car output is merely temporary to allow for model changeovers; prospects for the remainder of the year are regarded as excellent.

Recent orders from motor car makers include allocations by Chevrolet of flat-rolled steel products for approximately 90,000 cars. Chrysler, Buick and Packard also have bought steel, the last-named specifying rush deliveries. Ford's purchases in the last fortnight, mainly of sheets and strip steel, are estimated at close to 50,000 tons.

Base prices have stood the crucial test of volume purchases by automotive interests, though on sheets deep drawing extras of \$3 to \$7 a ton were waived. However, sheets sold without the drawing extra are not subject to breakage allowance by the consumer, so that the waiving of the extra is not a complete loss to the mills.

MOST encouraging and significant of recent developments is the growing consumption of steel by makers of machinery and equipment representing the capital goods industries. These interests are now more active takers of steel than are producers of refrigerators, stoves, light household equipment and other consumer goods. This relationship has probably not occurred in more than five years. The growing backlog of the machinery group, including builders of machine tools, forging equipment and allied lines, have been swelled this week by purchases estimated at close to \$1,000,000 by an Eastern subsidiary of an automotive interest. Another highlight is a purchase by Fiat of \$400,000 worth of American machine tools for the production of a small car in the low-priced field.

In the construction field the growing number of private projects is heartening, particularly because of the slowness with which the Federal works relief program is getting under way. New York State grade separation work, according to present prospects, will not get under way until next year, and plans for New Jersey and Pennsylvania road and grade crossing work are still nebulous.

Fabricated steel awards, totaling 21,450 tons, and plate lettings, aggregating 7165 tons, are made up predominantly of public projects, but constructional steel tonnage placed to date this year still lags far behind the total for the corresponding period of 1934.

MOST producers of iron and steel will announce fourth quarter quotations, which will probably be unchanged from present prices, on Aug. 21. Though the code is no longer in force, the trade is continuing to limit commitments to calendar quarters. The revision of hot-rolled bar extras, effective Aug. 10, will not be entirely in favor of the buyer. Advances on certain sizes of rounds, squares and flats range from \$1 to \$4 a ton. On the other hand, bending extras on reinforcing bars have been reduced by the mills in certain areas from \$6 and \$16 a ton for heavy and light bending to \$4 and \$12 a ton respectively.

Pig iron production in July totaled 1,520,263 tons, compared with 1,552,514 tons in June. The daily rate last month, at 49,041 tons, was 5.2 per cent below the June average of 51,750 tons. However, 95 furnaces were in blast Aug. 1, a net gain of four over the number active July 1.

Advances in steel output during the week include gains of one point to 43 per cent at Pittsburgh, two points to 54 per cent at Chicago, five points to 50 per cent at Cleveland, and three points to 33 per cent in the South.

THE IRON AGE composite prices for pig iron and finished steel are unchanged at \$17.84 a ton and 2.124c. a lb. respectively.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous;
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron

	Per Gross Ton:		Aug. 6, July 30, 1935		July 9, 1935		Aug. 7, 1934	
No. 2 fdy., Philadelphia	\$20.3132	\$20.3132	\$20.3132	\$20.3132	\$20.26			
No. 2, Valley furnace	18.50	18.50	18.50	18.50				
No. 2 Southern, Cin'ti	19.2007	19.2007	19.2007	19.2007	19.13			
No. 2, Birmingham†	14.50	14.50	14.50	14.50				
No. 2 foundry, Chicago*	18.50	18.50	18.50	18.50				
Basic, del'd eastern Pa.	19.8132	19.8132	19.8132	19.76				
Basic, Valley furnace	18.00	18.00	18.00	18.00				
Malleable, Chicago*	18.50	18.50	18.50	18.50				
Malleable, Valley	18.50	18.50	18.50	18.50				
L. S. charcoal, Chicago	24.2528	24.2528	24.2528	24.04				
Ferromanganese, seab'd car-lots	85.00	85.00	85.00	85.00				

†This quotation is for delivery in South; in the North prices are 38c. a ton under delivered quotations from nearest Northern furnace.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Rails, Billets, etc.

	Per Gross Ton:			
	Rails, heavy, at mill	Light rails, Pittsburgh	Re-rolling billets, Pittsburgh	Sheet bars, Pittsburgh
Rails, heavy, at mill	\$36.37 1/2	\$36.37 1/2	\$36.37 1/2	\$36.37 1/2
Light rails, Pittsburgh	35.00	35.00	35.00	35.00
Re-rolling billets, Pittsburgh	27.00	27.00	27.00	27.00
Sheet bars, Pittsburgh	28.00	28.00	28.00	28.00
Slabs, Pittsburgh	27.00	27.00	27.00	27.00
Forging billets, Pittsburgh	32.00	32.00	32.00	32.00
Wire rods, Pittsburgh	38.00	38.00	38.00	38.00
Cents	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.70	1.70	1.70	1.70

Finished Steel

	Per Lb.:			
	Cents	Cents	Cents	Cents
Bars, Pittsburgh	1.80	1.80	1.80	1.80
Bars, Chicago	1.85	1.85	1.85	1.85
Bars, Cleveland	1.85	1.85	1.85	1.85
Bars, New York	2.15	2.15	2.15	2.13
Plates, Pittsburgh	1.80	1.80	1.80	1.80
Plates, Chicago	1.85	1.85	1.85	1.85
Plates, New York	2.09	2.09	2.09	2.08
Structural shapes, Pittsburgh	1.80	1.80	1.80	1.80
Structural shapes, Chicago	1.85	1.85	1.85	1.85
Structural shapes, New York	2.06 1/4	2.06 1/4	2.06 1/4	2.05 1/4
Cold-finished bars, Pittsburgh	1.95	1.95	1.95	2.10
Hot-rolled strips, Pittsburgh	1.85	1.85	1.85	1.85
Cold-rolled strips, Pittsburgh	2.60	2.60	2.60	2.60

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

The Iron Age Composite Prices

Finished Steel

Aug. 6, 1935	2.124c. a Lb.
One week ago	2.124c.
One month ago	2.124c.
One year ago	2.124c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products make 85 per cent of the United States output.

Pig Iron

\$17.84 a Gross Ton
17.84
17.84
17.90

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap

\$11.83 a Gross Ton
11.58
10.75
10.33

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	HIGH	LOW	HIGH	LOW	HIGH	LOW
1935	2.124c., Jan. 3	2.124c., Jan. 8	\$17.90, Jan. 8	\$17.83, May 14	\$12.33, Jan. 8	\$10.33, April 23
1934	2.199c., April 24	2.008c., Jan. 2	17.90, May 1	16.90, Jan. 27	13.00, Mar. 13	9.50, Sept. 25
1933	2.015c., Oct. 3	1.867c., April 18	16.90, Dec. 5	13.56, Jan. 3	12.25, Aug. 8	8.75, Jan. 3
1932	1.977c., Oct. 4	1.926c., Feb. 2	14.81, Jan. 5	13.56, Dec. 6	8.50, Jan. 12	6.43, July 5
1931	2.037c., Jan. 13	1.945c., Dec. 29	15.90, Jan. 6	14.79, Dec. 15	11.33, Jan. 6	8.50, Dec. 29
1930	2.273c., Jan. 7	2.018c., Dec. 9	18.21, Jan. 7	15.90, Dec. 16	15.00, Feb. 18	11.25, Dec. 9
1929	2.317c., April 2	2.273c., Oct. 29	18.71, May 14	18.21, Dec. 17	17.58, Jan. 29	14.08, Dec. 2
1928	2.286c., Dec. 11	2.217c., July 17	18.59, Nov. 27	17.04, July 24	16.50, Dec. 31	13.08, July 2
1927	2.402c., Jan. 4	2.212c., Nov. 1	19.71, Jan. 4	17.54, Nov. 1	15.25, Jan. 11	13.08, Nov. 22

Pittsburgh Production Rises One Point to 43 Per Cent



Valley and Wheeling District Rates Are Unchanged—Leveling Off of Current Upturn Indicated

PITTSBURGH, Aug. 6.—Production of steel ingots in the Pittsburgh district this week is at about 43 per cent of capacity, up one point from last week and the highest rate of the year except for one week early in February. Production is increased a trifle by resumption of the rail mill on a limited schedule, while a large independent interest has a little better schedule. The Wheeling district is unchanged at 75 per cent, and the Valley district, unchanged at 50 per cent.

Sentiment in steel circles has grown better for a long pull, but it is felt that there may be a slight lull in total demand during the remainder of the month because tin plate mills are due for lighter operations and the between-seasons period in the automobile industry is at hand. Demand from practically all other directions shows an upward trend. The Ford Motor Co. has placed some substantial tonnages of sheets against the new model and a limited tonnage of strips, paying in all cases regular prices with no concessions, and the trade feels that the market has passed the crucial test awaited for some time.

Belief is general that the recent upward swing in steel demand represents the beginning of a long movement, different from others in the depression which lasted only a short time.

Producers of pig iron, semi-finished steel and finished steel products will file unchanged prices for fourth quarter deliveries on Aug. 21. No deviations in any direction have been considered. Order books for the quarter will be opened technically on Sept. 1, but practically on Tuesday, Sept. 3.

Pig Iron

Activity at several of the iron foundries has increased in the last week, but while more iron is being melted no appreciable increase has occurred in buying. Some of the works making steel mill machinery are running well. Orders for foundry iron are fairly numerous, but

are generally only for single car-loads, while occasionally an order runs above 100 tons. Iron and steel foundry operations are expected to increase along with the increased activity in the steel trade. Furnaces are expected to file prices on Aug. 21, making no change from current levels. Shenango furnace, Sharpsville, Pa., banked last May, will resume operations soon.

Semi-Finished Steel

Movement of semi-finished steel to sheet and strip mills is on the up-grade, while there is no change in movement to tin plate mills, which have been running virtually full for weeks, with light stocks of steel. Prices have held firmly and no questions are raised. Sellers expect to file current prices, for fourth quarter, on Aug. 21.

Bolts, Nuts and Rivets

No change in the volume of demand for nuts and bolts has been seen in the past week. Business has been running a shade lighter than in June. Demand for rivets remains light. Prices of bolts and nuts show some irregularities, but no more than formerly. Rivet prices have been holding rigidly.

Rails and Track Accessories

The local rail mill resumed operations this week to roll half of the Nickel Plate allocation, which totaled 1200 tons, and half of the 900 tons ordered by the Pittsburgh & Lake Erie. In each case the other half is scheduled for September. A few small orders will also be rolled. Track accessories continue to move in a small way.

Cold-Finished Bars

Tonnage has been well sustained at the moderate volume of the last few weeks. Movement to the automobile industry is light, as there has been only a small amount of business placed against the new models.

Plates and Shapes

The plate market remains quite dull, but is expected to grow more active within a few weeks, as some

tank business is under consideration. Inquiries for barges that came out weeks ago have not produced much tonnage. Fabricated structural steel lettings have run particularly light in the last two weeks. The Gulf Refining Co. has contracted with the American Bridge Co. for a service station in Pittsburgh requiring 120 tons.

Sheet Steel Piling

Occasional small orders are being booked, with no large work in sight.

Tubular Products

Demand for standard pipe continues to show an upward trend, with increases from week to week small but with comparison by months showing substantial rises when figured by percentage. However, demand is only a fraction of that in the late active period. Dwelling house construction has been increasing rather steadily, but is still only around 15 per cent of what it was in the most active years. Factories and mines are making only necessary repairs, but this results in a moderate tonnage of pipe. Demand for mechanical tubing has been heavy right along and has increased markedly in the last week or two. No change is seen in demand for boiler tubes, while locomotive tubes remain extremely slack. Demand for oil-country goods has been fairly heavy for more than a year, except for the dullness in the third quarter of last year on account of stocks accumulated before the price change of July 1. Line pipe shows no activity, except in small lots, but a number of pipe lines are expected to come to a head in the not very distant future. Pipe mills doubt whether a natural gas line will be laid to Detroit, three separate plans having been proposed for lines to come from three points.

Bars

Demand for merchant steel bars has increased a trifle more, and with recent increases is running far above that in June. Orders come from a wide variety of sources and producers regard the fact as a particularly favorable sign. The automobile industry is taking only small lots. It is expected that all mills will file prices for fourth quarter deliveries about Aug. 21. The price of 1.60c., Pittsburgh, has been held rigidly. The new "standard classification of extras" issued by the Carnegie Steel Co., to be effective on Aug. 10, is expected to be adopted generally. On rounds and squares the base sizes include only 47/64 to 1 1/2 in., the former range, in force for decades, being 47/64 to 3 1/16 in. The extra of \$5 a ton on forging quality bars has been eliminated, while extras for requirement

quality bars and special carburizing steel have been reduced from \$10 to \$5 a ton.

Wire Products

Demand for merchant wire products has increased somewhat more, after the sharp increase reported a week ago. The expanded demand comes chiefly from jobbers in the agricultural sections, where the farmers are more prosperous than for several years. A favorable item is that the increase began a fortnight sooner than mills expected. A year ago the buying began later than expected and did not amount to a great deal. In most areas jobbers are selling at less than the prices they adhered to during the legal life of the code, taking advantage of their allowances of 20c. a 100 lb. on carload shipments to stock and 10c. on less carloads. This places mills at a disadvantage, as mills are adhering strictly to former prices. It is likely a new system will be set up soon, perhaps when prices for fourth quarter are filed on Aug. 21. Manufacturing wire, in fairly good demand for months, shows a distinct increase in demand in the past week. The price of 2.30c. for bright wire has held rigidly.

Sheets

The Ford Motor Co. has placed several tonnages of sheets against the 1936 model, to come out soon, and has paid full prices in all cases. The total amount of the purchases is not known. One report in circulation is that sheets were bought for 100,000 cars. Other demand for sheets has increased slightly. It comes from a wide variety of sources. Makers of metal lath and eaves trough and conductor pipe have been taking some tonnage in the last few weeks, against scarcely anything previously. The electrical industry takes a fair tonnage for small work, but scarcely anything for large work. Mill operations have increased further, averaging 60 per cent, against 55 per cent a week ago and 50 per cent a fort-

night ago. Prices have held rigidly, and the Ford business is held to supply the crucial test that had been awaited. Since the court decision of May 27 deprived the code of all legal force, all buying had been in small lots, furnishing a test, but not the final test. Mills will file current prices for fourth quarter deliveries on Aug. 21.

Tin Plate

Mills continue to run full in most cases, but the temporary idleness of one large producer pulls the average down from 88 per cent of standard running time last week to about 82 per cent this week. Large stocks remain at mills, made to customers' orders but not released for shipment. They were at their height about June 1. Some mills received heavy releases in June, but have scarcely had an even break since then, while others fared poorly in June but had large releases last month. A general decrease in mill operations, of seasonal character, is expected before the end of this month. The regular price, for fourth quarter delivery, will be filed on Aug. 21.

Strip Steel

Substantial increases in volume of orders are reported from a week ago. Both hot and cold-rolled strip mills averaged an operation between 30 and 35 per cent in July, but the trend is now upward. Not much tonnage is going to the automobile industry now. It is not known that the Ford Motor Co. has bought much tonnage of strips, but it is understood to have distributed some orders for the new model. Prices have held rigidly and will be filed without change on Aug. 21 for fourth quarter.

Coal and Coke

Demand for Pittsburgh district coal has been very light since the last extension, arranged on July 26. Previously there had been some additional stocking. The best positioned producers, with stocks of

their own in the Northwest, are averaging scarcely more than one-half standard running time, five seven-hour days in a week, while many are running only one or two days or are entirely idle. It appears that consumers are liquidating stocks, doubting whether any mining suspension will occur. The latest "truce" runs to Sept. 16. Prices have been steadier of late than for a time after the court decision of May 27 deprived the code of its legal force. The Connellsburg coke market is referred to as being the dullest in the whole history of the industry. Chateaugay furnace, Standish, N. Y., which was making low phosphorous iron with Connellsburg coke, has gone out of blast. Market prices are well held on what little business is going, at \$3.40 to \$3.65 for standard furnace and \$4.00 to \$4.25 on standard foundry.

Scrap

Consumer buying of scrap has been very light in the past week. Mills are interested in the market but seem unwilling to pay prices asked. Thus the market has not had adequate support and the tone is scarcely as strong as a week ago. Heavy melting steel scrap remains quotable at \$12.50 to \$13, having advanced \$1 a ton as reported last week. Dealers insist that any substantial tonnage should bring more than \$13, but see no place to secure an order at an advance. Continued demand at three points for No. 2 melting has raised the market 50c. to a range of \$11.50 to \$12. Low phosphorus sheet bar crops and billet crops are quoted on appraisal relative to the low phosphorus railroad specialties, making them 50c. and \$1 respectively above the specialties. Pittsburgh district mill operations have been rising week by week, but possibilities are seen of a slight lull in the next few weeks. The Pennsylvania Railroad August scrap list comprises 19,835 net tons, including 8590 tons of No. 1 heavy melting, bids to be in by Aug. 7. The Norfolk & Western list covers 2843 tons, bids to be in by Aug. 15.

Weekly Indications of Steel Activity

From THE IRON AGE

	Average Year to Date				1935	1934
	Aug. 6, 1935	July 30, 1935	July 9, 1935	Aug. 7, 1934		
Steel ingot operations—Per cent of capacity	47.0	46.0	36.5	27.5	45.2	44.3
					Week Ended	
	Aug. 6, 1935	July 30, 1935	July 9, 1935	Aug. 7, 1934	1935	1934
Fabricated structural steel awards	21,450	4,250	21,800	8,800	415,152	498,820
Fabricated plate awards	7,165	3,800	1,185	0	78,032	85,467
Sheet steel piling awards	2,300	300	0	0	30,965	37,660
Reinforcing bar awards	4,800	1,525	920	1,700	125,200	126,980

Further Rise in Output In Chicago District



Ingot Rate Up Two Points to 54 Per Cent—Pig Iron Shipments Climb—Scrap Continues to Advance

CHICAGO, Aug. 6.—Practically every factor now bearing on the local iron and steel market points to strength and a steadily climbing demand. Sales and specifications of finished steel are well up to the average of recent weeks, all of which marked some improvement as shown by the fact that July shipments exceeded the June total by 15 per cent. August is starting off in a satisfactory manner, as shown by ingot output, which has climbed to 54 per cent of capacity, a gain of two points.

Miscellaneous demand is becoming increasingly important, and now automobile manufacturers are reaching beyond the experimental-tonnage stage on new models. Price structures of finished steel remain set, though they are not free from pressure, not merely in the form of suggestions but also in the shape of very attractive inquiries that have all the earmarks of feelers. Specifications for structural materials are heavier and they promise to expand under the influence of Mississippi River contracts, which are now being awarded. Of all the major sources of tonnage the railroads alone remain practically dormant. There is some promise that oil storage tanks will contribute tonnage to mills in the fall months.

The scrap market is climbing fast, both in demand for the various grades and in prices. Dealers are reaching far afield for supplies and mills have lifted all restrictions except inspection for quality.

Pig Iron

July shipments topped June by 6 per cent and releases show that the market is still climbing. Sellers are holding to the quarterly contract basis and will not open books for the fourth quarter until Sept. 1. While this may be one deterrent to buying, there is the other motive that users are keeping a close eye on prices which, however, remain firm and show no disposition to weaken.

Cast Iron Pipe

Current business is confined to small orders that are in fair volume. Large tonnages are scarce, though some sizeable jobs are being planned. The second section of the Milwaukee filter plant will be out for figures in 60 to 90 days. On the whole, shipments are heavier, and some foundries are now balanced between production and shipments and their stocks are no longer growing. There appears to be no concerted pressure against prices, which remain firm.

Reinforcing Bars

Two Mississippi River projects have added 1100 tons of bars to shop backlog, and more tonnage for similar work will be booked during August and September. A 100-ton Illinois bridge has been placed. Otherwise the Illinois road program is unusually slow. Dealers are expecting plans in about 30 days on the second section of the Milwaukee filter plant, which will take 2000 tons. Another large project is sanitary district work being planned at Minneapolis and St. Paul. Dealer price structures are again rather ragged. This same situation is reported to exist in Texas. Mill prices for reinforcing bars remain firm.

Wire Products

Output is holding close to 40 per cent of capacity and shipments are at the level of recent weeks, though specifications are more spotty than experienced heretofore by the trade. Backlogs are well sustained and the normal time for fall buying to start is only a few weeks in the future. Prices remain firm, though pressure for some kind of a concession is growing. It is thought by some that the matter of a Detroit base resolves itself into a proposition whereby users in that area would like to subtract the rail rate to mills and then use their own carriers in an effort to effect savings. These private carriers might be either boats or even trucks. Wire mills have not yet felt automobile buying in volume.

Numerous inquiries are out, but they seem to be in the nature of feelers. The entire situation is one in which buyers are exceptionally keen in the matter of studying price opportunities.

Cold Rolled Strip

Both orders and shipments are heavier as miscellaneous demand continues to grow. Automobile plants are taking experimental tonnages for new models. Several large inquiries are before the trade from that source.

Rails

Miscellaneous orders from Western railroads total 3500 tons, and mills are now scheduled at the current rate until the early part of September. No major orders for track accessories have reached mill books within the week, but odd lots are of fair size considering the time of year. The operators of several Western lines are worried because of the threat of loss of revenue due to wheat rust appearing in the territories served by them.

Plates

Plate tonnage is very thin though current work on the Mississippi River is at the point where it will begin to bolster books. There is once again talk about construction of new oil storage tanks, but no definite inquiries are before the trade. The Chesapeake & Ohio is in the market for 100 automobile box cars. In all other directions the railroad equipment market is dull.

Bars

Several producers will put into effect about Aug. 10 the contemplated changes in bar extras. In these schedules special quality bars will take the place of the old designation of forging quality. Forge shops in this area are quiet at the moment but they will soon be on heavy automobile parts schedules. It is reported that Ford is placing liberal parts orders, and there are some automobile builders who are planning weekly schedules that may prove to be heavier than any actual performance that took place in the first half of the year.

Structural Material

Specifications reaching mills are growing. This is an interesting turn, inasmuch as State and Federal bridge programs, which were so important in point of tonnage a year ago at this time, are now having little effect on the market. Big news of this market still centers in the upper stretches of the Mississippi River. Low bidders are announced on five of the locks, and bids are now being taken on about 11,000 tons of steel needed for gates on four dams. The character

of this market is well illustrated by the fact that there is a large number of very small inquiries that reach the rather impressive total of 800 tons.

Sheets

Demand is moving forward on a broad front. In the first place some automobile manufacturers are now taking sheets in substantial volume for use on new models. The miscellaneous trade is better, and roofers, keeping one eye on price structures, are ordering sheets in heavier quantities for products which they will deliver in the fall. Indications are that the roofing trade will not contract for fall delivery but will take deliveries as needed.

Scrap

Heavy melting steel has moved up 50c. a ton and prices are strong. Steel mills have removed all restrictions as to size of acceptances. Dealers are scrambling for tonnages and readily pay railroads \$12.50 a ton, delivered, and they freely offer a quarter less for a car or two that have been accumulated by a producer. Scrap is moving in from a wider territory and shipments of from 300 to 400 miles are common. Current offerings are large from the Illinois Central, Chicago & North Western and the Pennsylvania.

Fair Construction Awards on Coast

SAN FRANCISCO, Aug. 5.—Structural steel bookings reported during the past week were more numerous and for fair tonnages. Virginia Bridge & Iron Co. took 600 tons for a sound studio at Burbank, Cal., while Berkeley Steel Construction Co. will furnish 500 tons of hangers for the Broadway low level tunnel being constructed at Oakland, Cal. Approximately 500 tons went to Duffin Iron Works for bridges in Alaska. At Los Angeles, contracts for 1236 tons of reinforcing bars for County flood control work were awarded to Security Materials Co. and J. W. Black Co.

The construction of a telephone building at San Francisco and a building for W. & J. Sloane Co. at Beverly Hills, Cal., are of interest, for they may indicate the return of private work. Specified in the two buildings are 550 tons of structural steel and 300 tons of reinforcing bars respectively. A 10-story office building is now under construction at San Francisco. It is estimated that 1000 tons of reinforcing bars will be involved.

The greater share of activity on

the Pacific Coast at the present time is centered in the Los Angeles district. The Metropolitan Water District, with its 72,470 to 104,640-ton reinforcing bar contract in the offing, coupled with outstanding bar contracts of the County Flood Control District, makes this area the recipient of wide attention. School reconstruction is constantly calling for the placing of minor tonnages. There are definite indications of a real pickup of activity in the San Francisco and Northwest districts.

Cast Iron Pipe

New London, Conn., has placed a tonnage of 8 and 10-in. with United States Pipe & Foundry Co. at \$46.90 a ton.

Crandon, Wis., has applied for Federal loan to build waterworks and sewerage systems and sewage disposal plant to cost about \$156,466, designed by Jerry Donohue Engineering Co., 608 North Eighth Street, Sheboygan, Wis. R. W. Davis is mayor.

Fox Point (Milwaukee p. o.), Wis., contemplates installing about 3000 ft. of 12-in. class C water mains.

Oshkosh, Wis., has applied for PWA grant for filter plant addition, water mains and elevated storage tank, at total cost of \$132,100.

Louisiana, Mo., will take bids Aug. 12 on 300 tons.

Conrad, Mont., plans about 60,000 ft. of various sizes for extensions in water system. Fund of \$138,000 is being arranged through Federal aid. R. J. Kelly, city clerk, is in charge.

Enid, Okla., plans about 11 miles of 24-in., for main water trunk line. Special election will be held soon to approve bonds for \$1,000,000 for this and other waterworks extensions, including pumping station and filtration plant. Financing will be carried out through Federal aid. C. H. Guernsey, 1216 Grand Avenue, Cherokee, Okla., is consulting engineer.

North Las Vegas, Nev., plans water pipe lines. Fund of \$34,000 is being arranged through Federal aid for this and other waterworks installation. C. D. Baker, Las Vegas, is consulting engineer.

Worley, Idaho, will soon take bids for 8280 ft. of 2, 4 and 6-in. for water system; also for motor-driven turbine pumps and auxiliary waterworks equipment. Tigglebeck Engineering Co., Fidelity Building, Sandpoint, Idaho, is consulting engineer.

Long View, N. C., plans pipe lines for water system. Fund of \$60,000 is being arranged through Federal aid for this and other waterworks installation.

Lynchburg, Va., plans new 36-in line from Pedlar River water source for main trunk supply, replacing present 20-in. wood pipe.

German Valley, Ill., plans pipe lines for water supply. Fund of about \$50,000 will be arranged through Federal aid for this and other waterworks installation, including pumping station and elevated steel tank and tower. John Renken is village clerk.

Elsberry, Mo., plans about two and three-quarter miles of 6-in. for water system; also 100,000-gal. elevated steel tank and tower, pumping station and other waterworks installation. Financing will be arranged through Federal aid. Russell & Axon, 4903 Delmar Boulevard, St. Louis, are consulting engineers.

Mammoth Springs, Ark., plans water pipe lines. Fund of \$45,000 is being ar-

ranged through Federal aid for this and other waterworks construction.

Albuquerque, N. M., plans about 52 miles of 27-in. for main water line from proposed new reservoirs on Valle Grande and Valle San Antonio Rivers, respectively. Fund of \$2,225,000 is being arranged for entire project through Federal aid.

Great Falls, Mont., plans extensions in pipe lines for water system. Fund of about \$18,000 is being arranged through Federal aid for this and other waterworks installation.

San Diego, Cal., is considering recommendations of Fred Pyle, San Diego, hydraulic engineer, for about two and one-half miles of pipe lines in connection with Murray reservoir development, including water tanks and towers, filter plants and other waterworks construction. Cost about \$350,000.

San Francisco will take bids Aug. 16 on 2000 tons of 6 and 8-in.

Portland, Ore., will open bids Aug. 9 on 125 tons of 6 and 8-in.

Woodruff, Utah, has placed 165 tons with Pacific States Cast Iron Pipe Co.

Buffalo Scrap Prices In Further Rise

BUFFALO, Aug. 6.—Mill activity in this district continues the same as last week, with the Lackawanna plant of the Bethlehem Steel Co. operating nine open-hearths, Republic Steel Corp., three, and Wickwire-Spencer Steel Corp., one. The Seneca sheet division of Bethlehem remains on a 50 per cent basis.

There is a considerable volume of small fabricated steel jobs, most of them ranging from 10 to 30 tons. So far as fabricators' records are concerned, no job is now pending for as much as 100 tons.

Local pig iron producers have booked considerable business, with now and then a sizable tonnage, and in general, the individual tonnages running larger than they did in the spring and earlier. The blast furnace of the Tonawanda Iron Corp., subsidiary of the American Radiator Co., has been blowing since the first of the month.

While the scrap market is marked by few transactions, it has not had its present strength in months. One mill which had been offering \$10.50 for No. 1 and \$9 for No. 2 steel for weeks, has decided that it is not getting sufficient tonnage and has increased its offering price 50c. a ton on each commodity, but even these prices are not attractive to dealers. Dealers believe the next sale will be at \$12 for No. 1 and \$11 for No. 2 and freely predict \$14 for No. 1 scrap by spring. The New York Central and Erie lists, which closed the first part of the month, brought \$14 delivered, Valley. These lists were purchased by dealers, which means that the selling price will probably be \$14.50, Youngstown.

Prices of Finished Steel and Iron Products

BARS, PLATES, SHAPES

Iron and Steel Bars

	Soft Steel	Base per Lb.
Pittsburgh		1.80c.
Chicago		1.85c.
Gary		1.85c.
Duluth		1.95c.
Del'd Detroit		2.15c.
Cleveland		1.85c.
Buffalo		1.90c.
Philadelphia		2.10c.
New York		2.15c.
Birmingham		1.95c.
cars dock Gulf ports		2.20c.
cars dock Pacific ports		2.35c.

Rail Steel

(For merchant trade)	
Pittsburgh	1.70c.
Chicago	1.75c.
Gary	1.75c.
Moline, Ill.	1.75c.
Cleveland	1.75c.
Buffalo	1.80c.
Birmingham	1.85c.
cars dock Gulf ports	2.10c.
cars dock Pacific ports	2.25c.

Billet Steel Reinforcing

Straight lengths as quoted by distributors)	
Pittsburgh	2.05c.
Chicago	2.10c.
Gary	2.10c.
Del'd Detroit	2.20c.
Cleveland	2.10c.
Buffalo	2.15c.
Birmingham	2.10c.
cars dock Gulf ports	2.45c.
cars dock Pacific ports	2.45c.

Rail Steel Reinforcing

Straight lengths as quoted by distributors)	
Pittsburgh	1.90c.
Chicago	1.95c.
Gary	1.95c.
Cleveland	1.95c.
Youngstown	1.95c.
Buffalo	1.95c.
Birmingham	1.95c.
cars dock Gulf ports	2.30c.
cars dock Pacific ports	2.30c.

Iron

	Base per Lb.
Pittsburgh	1.95c.
Chicago	2.00c.
Gary	2.00c.
Cleveland	2.00c.
Buffalo	2.05c.
Del'd Detroit	2.15c.
eastern Michigan	2.20c.

* In quantities of 10,000 to 19,000 lb.

Fence and Sign Posts

Angle Line Posts

	Base per Net Ton
Pittsburgh	\$50.00
Chicago	50.00
Duluth	51.00
Cleveland	50.00
Birmingham	53.00
Houston, Orange, Beaumont, Galveston	59.00
Mobile	58.00
New Orleans, Lake Charles, Corpus Christi	59.00
cars dock Pacific ports	63.00

Plates

	Base per Lb.
Pittsburgh	1.80c.
Chicago	1.85c.
Gary	1.85c.
Del'd Cleveland	1.90c.
Costeville	1.90c.
Sparrows Point	1.90c.
Del'd Philadelphia	1.90c.
New York	2.00c.
Birmingham	1.95c.
cars dock Gulf ports	2.20c.
cars dock Pacific ports	2.35c.
rough iron plates, f.o.b. P'gh.	3.20c.

Floor Plates

	Base per Lb.
Pittsburgh	3.25c.
Chicago	3.40c.
Costeville	3.45c.
cars dock Gulf ports	3.75c.
cars dock Pacific ports	3.90c.

Structural Shapes

	Base per Lb.
Pittsburgh	1.80c.
Chicago	1.85c.
Gary	1.85c.
Del'd Cleveland	1.90c.
Buffalo	1.90c.
Bethlehem	1.90c.
Del'd Philadelphia	2.015c.
New York	2.0625c.
Birmingham (standard)	1.95c.
cars dock Gulf ports	2.20c.
cars dock Pacific ports	2.35c.

Steel Sheet Piling

	Base per Lb.
F.o.b. Pittsburgh	2.15c.
F.o.b. Chicago	2.25c.
F.o.b. Buffalo	2.25c.
F.o.b. cars dock Gulf ports	2.60c.
F.o.b. cars dock Pacific ports	2.60c.

SHEETS, STRIP, TIN PLATE TERNE PLATE

Sheets

	Base per Lb.
No. 10, f.o.b. Pittsburgh	1.85c.
No. 10, f.o.b. Gary	1.95c.
No. 10, del'd Detroit	2.05c.
No. 10, f.o.b. Phila.	2.15c.
No. 10, f.o.b. cars dock Pacific ports	2.40c.

Hot Rolled

	Base per Lb.
No. 10, f.o.b. Pittsburgh	1.85c.
No. 10, f.o.b. Gary	1.95c.
No. 10, f.o.b. Phila.	2.15c.
No. 10, f.o.b. cars dock Pacific ports	2.40c.

Heavy Cold-Rolled

	Base per Lb.
No. 10, f.o.b. Pittsburgh	2.50c.
No. 10, f.o.b. Gary	2.60c.
No. 10, del'd Detroit	2.70c.
No. 10, f.o.b. Phila.	2.81c.
No. 10, f.o.b. cars dock Pacific ports	3.10c.

Light Cold-Rolled

	Base per Lb.
No. 20, f.o.b. Pittsburgh	2.95c.
No. 20, f.o.b. Gary	3.05c.
No. 20, del'd Detroit	3.15c.
No. 20, f.o.b. Phila.	3.26c.
No. 20, f.o.b. cars dock Pacific ports	3.50c.

Galvanized Sheets

	Base per Lb.
No. 24, f.o.b. Pittsburgh	3.10c.
No. 24, f.o.b. Gary	3.20c.
No. 24, del'd Phila.	3.41c.
No. 24, f.o.b. Birmingham	3.25c.
No. 24, f.o.b. cars dock Pacific ports	3.70c.

Long Ternes

	Base per Lb.
No. 24, unassorted 8-lb. coating f.o.b. Pittsburgh	3.40c.
f.o.b. Gary	3.50c.
f.o.b. cars dock Pacific ports	4.10c.

Wire Hoops, Twisted or Welded

	Base per Lb.
No. 24, unassorted 8-lb. coating f.o.b. Pittsburgh	3.40c.
f.o.b. Gary	3.50c.
f.o.b. cars dock Pacific ports	4.10c.

Off List

	Base per Lb.
F.o.b. Pittsburgh	35 and 2 1/2 off
F.o.b. Chicago	35 off

Hot-Rolled Rail Steel Strips

	Base per Lb.
F.o.b. Pittsburgh	1.70c.
F.o.b. Chicago	1.75c.
F.o.b. Birmingham	1.95c.
F.o.b. cars dock Gulf ports	2.00c.
F.o.b. cars dock Pacific ports	2.35c.

To Manufacturing Trade

	Base per Lb.
Bright wire	2.30c.
Spring wire	2.90c.

Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester, Mass., and Duluth prices are \$2 a ton above Birmingham \$3 above Pittsburgh.

Qualified jobbers are entitled to a reduction of 20c. a 100 lb. from the base price on carload shipments to stock, and of 10c. a 100 lb. on less-carload shipments to stock.

On standard wire, barbed wire, staples and fence wire, prices of

25,000 lb. or ft. to 39,999 lb. or ft. 5%

12,000 lb. or ft. to 24,999 lb. or ft. 12 1/2%

6,000 lb. or ft. to 11,999 lb. or ft. 25%

2,000 lb. or ft. to 5,999 lb. or ft. 35%

Under 2,000 lb. or ft. 50%

On staples and barbed wire, prices of

36 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.

On wire nails, barbed wire, staples and fence wire, prices of

25,000 lb. or ft. to 39,999 lb. or ft. 5%

12,000 lb. or ft. to 24,999 lb. or ft. 12 1/2%

6,000 lb. or ft. to 11,999 lb. or ft. 25%

2,000 lb. or ft. to

BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Of List

Machine bolts 70, 10 and 5
Carriage bolts 70, 10 and 5
Lag bolts 70, 10 and 5

Flange bolts, Nos. 1, 2, 3 and 7
heads 70, 10 and 5

Hot-pressed nuts, blank or tapped,
square 70, 10 and 5

Hot-pressed nuts, blank or tapped,
hexagons 70, 10 and 5

C.p.c. and t. square or hex. nuts,
blank or tapped 70, 10 and 5

Semi-finished hexagon nuts, U.S.S.
and S.A.E., all sizes to and incl.

1 in. diameter 70, 10 and 5

Larger than 1 in. diameter 70

Stove bolts in packages, Pittsburgh 75

Stove bolts in packages, Cleveland 75

Stove bolts in bulk, Pittsburgh 83

Stove bolts in bulk, Chicago 83

Stove bolts in bulk, Cleveland 83

Tire bolts 60 and 5

Large Rivets

($\frac{1}{2}$ -in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh or Cleveland \$2.90

F.o.b. Chicago 5.00

F.o.b. Birmingham 3.05

Small Rivets

($\frac{1}{16}$ -in. and smaller)

Per Cent Of List

F.o.b. Pittsburgh 70 and 5

F.o.b. Cleveland 70 and 5

F.o.b. Chicago and Birmingham 70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding
45c. per 100 lb. on lots of 200 lb. or more)

Per Cent Of List

Milled cap screws, 1 in. dia. and
smaller 85 and 10

Milled standard set screws, case
hardened, 1 in. dia. and smaller

75 and 10

Milled headless set screws, cut thread
 $\frac{1}{4}$ in. and smaller 75

Upset hex. head cap screws, U.S.S.
or S.A.E. thread, 1 in. dia. and
smaller 87 $\frac{1}{2}$

Upset set screw, cut and oval point 80

Milled studs 65 to 65 and 10

Alloy and Stainless Steel

Alloy Steel Ingots

F.o.b. Pittsburgh, Chicago, Canton,
Massillon, Buffalo, Bethlehem.

Uncropped \$40 per gross ton

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton,
Massillon, Buffalo, Bethlehem.

Base price \$40 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo,

Bethlehem, Massillon or Canton.

Open-hearth grade, base 2.45c.

Delivered price at Detroit is 2.60c.

S.A.E. Alloy Series

Differential per 100 lb.

2000 (16% Nickel) 30.25

2100 (34% Nickel) 0.55

2200 (5% Nickel) 1.50

2300 (5% Nickel) 2.25

2100 Nickel Chromium 0.55

2200 Nickel Chromium 1.35

2300 Nickel Chromium 3.80

2400 Nickel Chromium 3.20

4100 Chromium Molybdenum (0.15
to 0.25 Molybdenum) 0.50

4100 Chromium Molybdenum (0.25
to 0.40 Molybdenum) 0.70

4600 Nickel Molybdenum (0.20 to
0.30 Molybdenum) (1.50 to
2.00 Nickel) 1.05

5100 Chromium Steel (0.60 to
0.90 Chromium) 0.35

5100 Chromium Steel (0.80 to
1.10 Chromium) 0.45

5100 Chromium Spring Steel
base 1.20

6100 Chromium Vanadium Bar
Steel 0.70

Chromium Nickel Vanadium 1.50

Carbo Vanadium 0.95

These prices are for hot-rolled steel
bars. The differential for most grades in
electric furnace steel is 50c. higher. The
differential for cold-drawn bars $\frac{1}{4}$ in. per
lb. higher with separate extras. Blooms,
billets and slabs under 4x4 in. or equivalent
are sold on the bar base. Slabs with
a section area of 16 in. and 2 $\frac{1}{2}$ in. thick
or over take the billet base. Sections 4x4
in. to 10x10 in. or equivalent carry a
gross ton price, which is the net price for
bars for the same analysis. Larger sizes
carry extras.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleve-
land or Buffalo. 2.95c. base per lb.

STAINLESS STEEL No. 302

(17 to 19% Cr. 7 to 9% Ni. 0.08 to
0.20% C.)

(Base Prices f.o.b. Pittsburgh)

Per Lb.

Forging billets 19.50c.

Rolling slabs 15c.

Bars 23c.

Plates 26c.

Structural shapes 23c.

Sheets 23c.

Hot-rolled strip 20 $\frac{1}{2}$ c.

Cold-rolled strip 27c.

Drawn wire 23c.

Delivered prices on Southern iron for shipment to Northern points are 38c. a gross
ton below delivered prices from the nearest Northern basing points.

LOW PHOSPHORUS PIG IRON

Basing points: Birdsboro, Pa., Steel-

ton, Pa., and Standish, N. Y. \$23.50

GRAY FORGE PIG IRON

Valley furnace \$18.00

Pittsburgh district furnace 18.00

Raw and Semi-Finished Steel

Carbon Steel Rerolling Ingots

F.o.b. Pittsburgh, Chicago, Gary, Cleve-
land, Youngstown, Buffalo, Birmingham.
Uncropped \$29 per gross ton

Carbon Steel Forging Ingots

F.o.b. Pittsburgh, Chicago, Gary, Cleve-
land, Youngstown, Birmingham.
Uncropped \$31 per gross ton

Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleve-
land, Youngstown, Buffalo, Birmingham.

Per Gross Ton

Rerolling \$27.00

Forging quality \$22.00

Delivered Detroit

Rerolling \$30.00

Billets Only F.o.b. Duluth

Forging \$29.00

Delivered Detroit

Rerolling \$30.00

Billets Only F.o.b. Duluth

Forging \$29.00

Delivered Detroit

Rerolling \$30.00

Billets Only F.o.b. Duluth

Forging \$29.00

Delivered Detroit

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Forging \$29.00

Delivered Detroit

Rerolling \$30.00

Billets Only F.o.b. Duluth

Forging \$29.00

Delivered Detroit

Iron and Steel Scrap

PITTSBURGH

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$12.50 to \$13.00
No. 2 heavy melting steel	11.60 to 12.00
No. 2 railroad wrought	12.00 to 12.50
Scrap rails	13.50 to 14.50
Balls, 3 ft. and under	14.50 to 15.00
Compressed sheet steel	12.50 to 13.00
Hand bundled sheet steel	11.00 to 11.50
Hvy. steel axle turnings	10.00 to 10.50
Machine shop turnings	8.50 to 9.00
Short shov. turnings	8.50 to 9.00
Short mixed borings and turnings	6.50 to 7.00
Cast iron borings	6.50 to 7.00
Cast iron carwheels	12.25 to 12.75
Heavy breakable cast	11.50 to 12.00
No. 1 cast	13.00 to 14.00
Bair. knuckles and couplers	14.50 to 15.00
Hall coil and leaf springs	14.50 to 15.00
Baled steel wheels	15.50 to 16.00
Low phos. billet crops	15.50 to 16.00
Low phos. sheet bar crops	15.50 to 16.00
Low phos. punchings	14.50 to 15.00
Low phos. plate scrap	14.00 to 14.50
Steel car axles	14.25 to 14.75

CLEVELAND

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$11.00 to \$11.50
No. 2 heavy melting steel	10.50 to 11.00
No. 2 railroad wrought	11.50 to 12.00
Scrap rails	13.50 to 14.50
Balls, 3 ft. and under	14.50 to 15.00
Compressed sheet steel	12.50 to 13.00
Hand bundled sheet steel	11.00 to 11.50
Hvy. steel axle turnings	10.00 to 10.50
Machine shop turnings	8.50 to 9.00
Short shov. turnings	8.50 to 9.00
Short mixed borings and turnings	6.50 to 7.00
Cast iron borings	6.50 to 7.00
Mixed borings and short turnings	7.00 to 7.50
No. 1 busheling	7.00 to 7.50
No. 1 cast	12.50 to 13.00
Railroad grade bars	7.00 to 7.50
Stove plate	7.50 to 8.00
Rails under 3 ft.	13.00 to 13.50
Rails for rolling	15.50 to 16.00
Railroad malleable	13.50 to 14.00
Cast iron carwheels	10.75 to 11.00

BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:	
No. 1 heavy melting steel	\$11.50 to \$12.00
No. 2 heavy melting scrap	10.50 to 11.00
Scrap rails	11.50 to 12.00
New hydraulic comp. sheets	10.50 to 11.00
Old hydraulic comp. sheets	9.50 to 10.00
Drop forge flashings	10.50 to 11.00
No. 1 busheling	10.50 to 11.00
Hvy. steel axle turnings	10.50 to 11.00
Machine shop turnings	6.00 to 6.50
Knuckles and couplers	12.50 to 13.00
Cast and leaf springs	12.50 to 13.00
Rolled steel wheels	12.50 to 13.00
Low phos. billet crops	14.50 to 15.00
Short shov. steel turnings	6.50 to 7.00
Short mixed borings and turnings	6.50 to 7.00
Cast iron borings	6.50 to 7.00
No. 2 busheling	7.00 to 7.50
Iron car axles	12.50 to 13.00
No. 1 cupola cast	11.50 to 12.00
Iron axes	12.50 to 13.00
No. 1 machinery cast	11.50 to 12.00
Iron plates	9.00 to 10.00
Steel rails, 3 ft. and under	10.00 to 12.50
Cast iron carwheels	11.00 to 11.50
Industrial malleable	13.00 to 13.50
Railroad malleable	13.00 to 13.50
Chemical borings	9.00 to 9.50

BOSTON

Dealers' buying prices per gross ton:	
*No. 1 heavy melting steel	\$8.75 to \$9.00
No. 1 heavy melting steel	6.65 to 6.90
No. 2 steel	6.65 to 6.90
No. 3 steel	7.75 to 8.00
Breakable cast	5.65 to 5.90
Machine shop turnings	2.50 to 2.75
(short)	4.00 to 4.25
Bundled skeleton, long	5.50 to 5.75
Vorgee flashings	5.50 to 5.75
Shafting	12.00 to 12.50
Steel car axles	12.00 to 12.25
Cast from borings, chemical	7.90

Per gross ton delivered consumers' yards:	
Textile cast	39.25 to \$10.00
No. 1 machinery cast	9.50 to 10.00
Stove plate	6.00 to 6.50
Railroad malleable	11.00 to 11.50

* Delivered local army base.

NEW YORK

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel	\$7.50 to \$8.50
No. 2 heavy melting steel	6.25 to 7.25
Hydraulic compressed, new	10.00 to 10.50
Hydraulic compressed, old	8.00 to 8.50
Steel rails for rolling	12.50 to 13.50
Cast iron carwheels	11.00 to 11.50
Heavy breakable cast	10.50 to 11.00
No. 1 cast	11.00 to 11.50
Stove plate (steel works)	6.50
Machine shop turnings	6.00 to 6.50
No. 1 blast furnace	5.00
Heavy axle turnings	9.50 to 10.00
Cast borings	5.00 to 5.50
No. 1 low phos. heavy	13.75 to 14.25
Couplers and knuckles	13.50 to 14.00
Rolled steel wheels	13.50 to 14.00
Steel axles	16.00
Shafting	17.50
No. 1 railroad wrought	10.00 to 10.50
Spec. iron and steel pipe	9.50 to 10.00
Bundled sheets	9.50 to 10.00
No. 1 forge fire	9.50 to 10.00
Cast borings (chem.)	10.50 to 13.00

CINCINNATI

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel	\$8.75 to \$9.25
No. 2 heavy melting steel	7.25 to 7.75
Scrap rails for melting	8.50 to 9.00
Loose sheet clippings	5.25 to 5.75
Bundled sheets	6.50 to 7.00
Cast iron borings	4.75 to 5.25
Machine shop turnings	5.00 to 5.50
No. 1 busheling	6.00 to 6.50
No. 2 busheling	3.00 to 3.25
Rails for rolling	9.50 to 10.00
Short rails	12.25 to 12.75
Cast iron carwheels	8.50 to 9.25
No. 1 machinery cast	9.75 to 10.25
Burnt cast	9.00 to 9.50
Stove plate	5.50 to 7.00
Agricultural malleable	6.00 to 7.00
Railroad malleable	9.75 to 10.25

ST. LOUIS

Per gross ton delivered consumers' yards:	
Selected heavy steel	\$9.25 to 9.75
No. 1 heavy melting	8.75 to 9.25
No. 2 heavy melting	7.75 to 8.25
Compressed sheet steel	10.50 to 11.00
Light bundled sheet stampings	8.00 to 8.50
Drop forge flashings	8.50 to 10.00
Machine shop turnings	6.50 to 7.00
Short shoveling turnings	7.00 to 7.50
No. 1 busheling	9.50 to 10.00
Steel axle turnings	9.50 to 10.00
Iron car axles	15.50 to 16.00
No. 1 railroad wrought	7.00 to 7.50
Cast iron borings	12.00 to 12.50
Steel angle bars	10.50 to 11.00
Cast iron carwheels	8.00 to 8.50
No. 1 machinery cast	8.50 to 9.00
Railroad grade bars	10.50 to 11.00
Stove plate	7.50 to 8.00
Rails under 3 ft.	13.00 to 13.50
Rails for rolling	15.50 to 16.00
Railroad malleable	13.50 to 14.00
Cast iron carwheels	10.75 to 11.00

DETROIT

Dealers' buying prices per gross ton:	
Heavy melting steel	\$9.00 to \$9.50
Borings and short turnings	5.25 to 5.75
Cast iron borings	5.00 to 5.50
Drop forge turnings	3.00 to 3.50
Rails for rolling	11.00 to 11.50
Machine shop turnings	2.75 to 3.25
Heavy turnings	5.50 to 6.00
Steel car axles	12.00 to 12.50
Iron car axles	15.00 to 16.00
No. 1 railroad wrought	7.00 to 7.50
Cast iron borings	12.00 to 12.50
Steel angle bars	10.50 to 11.00
Cast iron carwheels	8.00 to 8.50
No. 1 machinery cast	8.50 to 9.00
Railroad grade bars	10.50 to 11.00
Stove plate	7.50 to 8.00
Rails under 3 ft.	13.00 to 13.50
Rails for rolling	15.50 to 16.00
Railroad malleable	13.50 to 14.00
Cast iron carwheels	10.75 to 11.00

ORES, FLUORSPAR, COKE, FUEL, REFRactories

Lake Superior Ores

Delivered Lower Lake Ports

Per Gross Ton	
Old range, Bessemer	51.50% iron
Old range, non-Bessemer	51.50% iron
Mesabi, Bessemer	51.50% iron
Mesabi, non-Bessemer	51.50% iron
High phosphorus	51.50% iron

FOUNDRY, BY-PRODUCT, ST. LOUIS

f.o.b. ovens

f.o.b. del'd

St. Louis

Per Gross Ton

Old range, Bessemer, 51.50% iron

Old range, non-Bessemer, 51.50% iron

Mesabi, Bessemer, 51.50% iron

Mesabi, non-Bessemer, 51.50% iron

High phosphorus, 51.50% iron

COAL, COKE, COAL AND FUEL OIL

Per Net Ton

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Warehouse Prices for Steel Products

PITTSBURGH

	Base per Lb.
Plates	3.15c.
Structural shapes	3.15c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Cold-finished and screw stock:	
Rounds and hexagons	3.20c.
Squares and flats	3.20c.
Hoops and bands under 3/4 in.	3.20c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles	3.30c.
Galv. sheets (No. 24), 25 or more bundles	3.30c.
Hot-rolled sheets (No. 10)	2.95c.
Galv. corrug. sheets (No. 28), per square (more than 3750 lb.)	3.60
Spikes, large	2.90c.
Track bolts, all sizes, per 100 count, 65 per cent off list	
Machine bolts, 100 count, 65 per cent off list	
Carriage bolts, 100 count, 65 per cent off list	
Nuts, all styles, 100 count, 65 per cent off list	
Large rivets, base per 100 lb. \$3.50	
Wire, black, soft ann'd, base per 100 lb. *2.70	
Wire, galv. soft, base per 100 lb. *2.925	
Common wire nails, per kg. *2.834	
Comet coated nails, per kg. *2.834	

On plates, structural, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 9999 lbs.

*Delivered in Pittsburgh switching district.

CHICAGO

	Base per Lb.
Plates and structural shapes	3.20c.
Soft steel bars	2.95c.
Cold-fin. steel bars:	
Rounds and hexagons	3.35c.
Flats and squares	3.35c.
Hot-rolled strip	3.30c.
Hot-rolled annealed sheets (No. 24)	3.35c.
Galv. sheets (No. 24)	4.55c.
Hot rolled sheets (No. 10)	3.05c.
Spikes (kg lots)	3.50c.
Track bolts (kg lots)	4.65c.
Rivets, structural (kg lots)	3.65c.
Rivets, boiler (kg lots)	2.75c.
Machine bolts	*70
Carriage bolts	*70
Lag screws	*70
Hot-pressed nuts, sq. tap. or	
Hot-pressed nuts, sq. tap. or blank.	*70
Hot-pressed nuts, hex. tap or	
Hot-pressed nuts, hex. tap or blank.	*70
Hex. head cap screws	3.75c.
Cut point set screws	60
Flat head bright wood screws	50 and 20
Spring cotter	55
Screws bolts in full packages	
Rd. hd. tank rivets, 7/16 in. and smaller	57.5c.
Wrought washers	*4.50 off list
Black ann'd wire per 100 lb.	\$.85
Common wire nails, base per kg.	2.95c.
Cement ct'd nails, base per kg.	2.95c.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies to orders of 400 to 9999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

*These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 65 per cent off. Discounts applying to country trade are 70 per cent off f.o.b., Chicago, with full or partial freight allowed up to 50c. per 100 lb.

*Prices for city and suburbs only.

NEW YORK

	Base per Lb.
Plates, 3/4 in. and heavier	3.40c.
Structural shapes	3.27c.
Soft steel bars, small shapes	3.26c.
Iron bars	3.26c.
Iron bars, swed. charcoal	6.50c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons	3.81c.
Flats and squares	4.31c.
Cold-rolled: strip, soft and quarter hard	3.36c.
Hoops	3.56c.
Bands	3.56c.
Hot-rolled sheet (No. 10)	3.31c.
Hot-rolled ann'd sheets (No. 24*)	3.89c.
Galvanized sheets (No. 24*)	4.50c.
Long term sheets (No. 24)	5.20c.
Standard tool steel	11.00c.
Wire, black annealed (No. 10)	3.40c.
Wire, galv. (No. 10)	3.75c.
Tire steel, 1 x 1/2 in. and larger	3.65c.
Open hearth spring steel	4.00c. to 10.00c.
Common wire nails, base, per kg.	\$.21
Machine bolts, cut thread: Off List	
All diameters	.65 and 10
Carriage bolts, cut thread:	
All diameters	.65 and 10

Boiler tubes:	Per 100 Ft.
Lap welded, 2-in.	\$.18.05
Seamless welded, 2-in.	19.24
Charcoal iron, 2-in.	24.94
Charcoal iron 4-in.	63.95

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

ST. LOUIS

	Base per Lb.
Plates and struc. shapes	3.45c.
Bars, soft steel or iron	3.20c.
Cold-fin. rounds, shafting, screw stocks	3.60c.
Hot-rolled annealed sheets (No. 24)	4.10c.
Galv. sheets (No. 24)	4.65c.
Hot-rolled sheet (No. 10)	3.30c.
Black corrug. sheets (No. 24)	4.10c.
Galv. corrug. sheets	4.65c.
Structural rivets	4.00c.
Boiler rivets	Per Cent Off List
Tank rivets, 7/16 in. and smaller	55
Machine and carriage bolts, lag screws, fitting up bolts, bolt ends, plow bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts: All quantities	70

*No. 26 and lighter take special prices.

PHILADELPHIA

	Base per Lb.
*Plates, 3/4-in. and heavier	2.98c.
*Structural shapes	2.98c.
*Soft steel bars, small shapes, iron bars (except bands)	2.98c.
*Reinforce. steel bars, sq. twisted and deformed	2.96c.
Cold-finished steel bars	3.61c.
*Steel hoops	3.43c.
*Steel bands, No. 12 and 3/16 in. incl.	3.18c.
Spring steel	5.00c.
*Hot-rolled anneal. sheets (No. 24)	3.65c.
*Galvanized sheets (No. 24)	4.30c.
*Hot-rolled annealed sheets (No. 10)	3.08c.
Diam. pat. floor plates, 3/4 in.	4.95c.
Swedish iron bars	6.25c.

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

*Base prices subject to deduction on orders aggregating 4000 lb. or over.

*For 50 bundles or over.

*For less than 2000 lb.

CLEVELAND

	Base per Lb.
Plates and struc. shapes	3.31c.
Soft steel bars	2.95c.
Reinforce. steel bars	2.10c.
Cold-finished steel bars	3.25c.
Hot-rolled steel under 3/4 in.	3.38c.
Cold-finished strip	13.00c.
Hot-rolled annealed sheets (No. 24)	3.96c.
Galvanized sheets (No. 24)	4.61c.
Hot-rolled sheets (No. 10)	3.11c.
Hot-rolled 3/16 in. to 48 in. wide sheets	3.56c.
Black ann'd wire, per 100 lb.	\$.22.65
9 galv. wire, per 100 lb.	3.00
Common wire nails, base per kg.	2.40

*Outside delivery 10c. less.

CINCINNATI

	Base per Lb.
Plates and struc. shapes	3.42c.
Bars, soft steel or iron	3.17c.
New billet reinforce. bars	3.25c.
Rail steel reinforce. bars	3.25c.
Hoops and bands, 3/16 in. and lighter	3.47c.
Cold-finished bars	3.57c.
Hot-rolled annealed sheets (No. 24)	4.02c.
Galv. sheets (No. 24)	4.72c.
Hot-rolled sheets (No. 10)	3.22c.
Structural rivets	4.35c.
Small rivets	55 per cent off list
No. 9 ann'd wire, per 100 lb. (1000 lb. or over)	\$2.88
Common wire nails, base per kg.	3.04
Cement ct'd nails, base, 100-lb. kg	3.50
Chain, 1-in. per 100 lb.	8.85
Net per 100 Ft.	
Seamless steel boiler tubes, 2-in.	\$.22.66
4-in.	48.14
Lap-welded steel boiler tubes, 2-in.	19.35
4-in.	45.30

Prices given above are delivered Milwaukee.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies to orders of 400 to 9999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 3499 lb. On cold-finished bars the prices are for orders of 300 to 499 lb.

BUFFALO

	Base per Lb.
Plates	3.38c.
Struc. shapes	3.25c.
Soft. steel bars	3.00c.
Reinforcing bars	2.60c.

On mild steel bars, shapes, plates and hoops and bands the base applies on 400 to 14,000 lb. On cold-finished bars, hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over.

	Base per Lb.
Cold-fin. flats and sq.	3.40c.
Round and hex.	3.40c.
Cold-rolled strip steel	3.19c.
Hot-rolled annealed sheets (No. 24)	4.06c.
Heavy hot-rolled sheets, 3/16 in.	3.63c.
Galv. sheets (No. 24)	4.70c.
Bands	3.43c.
Hoops	3.43c.
Heavy hot-rolled sheets	3.18c.
Com. wire nails, base per kg.	\$.35
Black wire, base per 100 lb. (2500-lb. lots or under)	3.55
(Over 2500 lb.)	3.45

BALTIMORE

	Base per Lb.
*Mild steel bars	2.95c.
*Bars	2.95c.
*Reinforcing bars	2.95c.
*Structural shapes	3.00c.
*Plates	3.00c.
*Hot-rolled sheet, No. 10	3.10c.
*Hot-rolled annealed sheets, No. 24	3.96c.
*Galvanized sheets, No. 24	4.30c.
*Bands	3.20c.
*Hoops	3.45c.
*Cold-rolled rounds	3.58c.
*Cold-rolled squares, hex. and flats	3.58c.
Rivets	4.40c.
Bolts and nuts, per cent off list	.60 and 10

*Quantity extras per size apply. *Quantity extras per thickness apply. Hot-rolled quantity extras are: 2000 lb. and over, base: 1500 lb. to 1999 lb., add 15c. per 100 lb.; 1000 lb. to 1499 lb., add 30c. to 999 lb., add 50c.; 150 bundles and over, base: For 1 to 9 bundles add 50c. per 100 lb.; for 10 to 49 bundles add 25c.

*Base for 1000 lb. and over. For 500 to 999 lb. add 25c. per 100 lb.; for 300 to 499 lb. add 75c.; for 0 to 299 lb. add \$1.25.

CHATTANOOGA

	Base per Lb.
Mild steel bars	2.95c.
Iron bars	3.31c.
Reinforcing bars	3.31c.
Structural shapes	3.56c.
Plates	3.56c.
Hot-rolled sheets, No. 10	3.36c.
Hot-rolled annealed sheets, No. 24	4.21c.
Galvanized sheets, No. 24	4.86c.
Steel bands	3.61c.
Cold-finished bars	3.95c.

Prices delivered by truck in metropolitan Boston, subject to quantity differentials.

BOSTON

	Base per Lb.
Beams, channels, angles, tees, zees	3.54c.
H beams and shapes	3.51c.
Plates—sheared, tank and univ. mill, 3/4 in. thick and heavier	3.56c.
Floor plates, diamond pattern	3.56c.
Bar and bar shapes (mild steel)	3.35c.
Bands 3/16 in. thick and	3.35c.
No. 12 ga. incl.	3.65c. to 4.05c.
Half rounds, half ovals, ovals and bevels	4.80c.
Tire steel	4.60c

Spelter Rises Ten Points to 4.50c.— Lead Five Points Higher at 4.20c.

Consumers Continue to Purchase Zinc and Lead After Price Advances—
August Copper Sales Total 3800 Tons—Tin Quiet

NEW YORK, Aug. 6.—In view of the heavy purchases of electrolytic copper made last month, the sustained demand for this metal continues to encourage all sellers. Bookings so far in August amount to 3800 tons, with delivery dates specified from nearby to the end of the year. The price is still firm at 8c. a lb., delivered Connecticut valley. Demand in the foreign markets continues moderately heavy, and price movements there have been within narrow limits. Today's offerings were on the basis of 7.90c. a lb., c.i.f. usual Continental base ports, which represents about a five point advance over the position of a week ago. Price variations abroad are being closely scrutinized by sellers here. Should foreign bids rise to above

8c., the way would be opened for domestic interests to tighten up on offerings and perhaps seek a higher return on their holdings.

The United States Bureau of Mines has just released figures on the secondary production of copper during 1934. About 292,500 tons was recovered, having a value of \$46,800,000, as compared with 247,100 tons recovered in 1933 which had a value of \$31,628,800.

Zinc

Many galvanizers report operations at the highest level for several years. And this sustained consumption of spelter has been reflected in prices. Most sellers marked up all offers five points early on Friday and as bookings continued to come in an additional

five points was added late in the day. Consequently, Prime Western is now quotably firm at 4.50c. a lb., East St. Louis, and 4.87½c. in the New York area. Total bookings of Prime Western last week amounted to 7000 tons, of which 5600 tons was sold at 4.40c., 700 tons at 4.45c. and 700 tons at 4.50c. Undelivered orders now stand at 39,000 tons. The advance in refined metal opened the way for Tri-State ore producers to mark up concentrates \$1 a ton, with some sellers talking an additional advance. Production last week amounted to 7800 tons, sales totaled 6800 tons, and 5700 tons of concentrates were shipped. Stocks now stand at about 25,000 tons.

Lead

With consumers coming into the market steadily, leading producers were able to advance the market five points to a 4.20c., New York, level last Friday. Ever since the rise, the market has responded with sufficient orders to keep sellers satisfied. August is now fairly well covered, and the bulk of current business is for September delivery. This latter month has as yet hardly been touched. The Bureau of Mines has just announced that total recovery of secondary lead in 1934 amounted to 208,400 tons valued at \$15,421,600, as compared with 224,500 tons recovered in 1933 having a value of \$16,613,000.

Tin

With the London market closed from Friday until today, the domestic market has been quiet. Straits this morning opened at 52.50c. a lb., for prompt shipment, with September metal offered at 51.15c. and October positions at 50.60c. Thus it is evident that the stringency in spot tin continues, thereby burdening the small buyer who purchases only for immediate requirements. Larger users of tin continue to avoid heavy purchases for forward delivery under the prevailing unsettled conditions of the industry. On first call this morning in London, spot and future standard were quoted at £233 17s. 6d. and £215 15s. respectively, and Straits in Singapore was listed at £227 10s.

Non-Ferrous Averages

The average prices of the major non-ferrous metals for July, based on daily quotations in THE IRON AGE, are as follows:

	Average
Electrolytic copper, N. Y.†	7.75c. a lb.
Lake copper, Eastern delivery	8.125c. a lb.
Straits tin, spot, N. Y.	52.307c. a lb.
Zinc, East St. Louis	4.825c. a lb.
Zinc, New York	4.70c. a lb.
Lead, St. Louis	3.973c. a lb.
Lead, New York	4.123c. a lb.

†Price 1/4c. higher in Connecticut Valley.

The Week's Prices. Cents Per Pound for Early Delivery

	July 31	Aug. 1	Aug. 2	Aug. 3	Aug. 5	Aug. 6
Electrolytic copper, N. Y.*	7.75	7.75	7.75	7.75	7.75	7.75
Lake copper, N. Y.	8.12½	8.12½	8.12½	8.12½	8.12½	8.12½
Straits tin, spot, New York	52.65	52.62½	52.55	52.55	52.50	52.50
Zinc, East St. Louis	4.40	4.50	4.50	4.50	4.50	4.50
Zinc, New York†	4.77½	4.87½	4.87½	4.87½	4.87½	4.87½
Lead, St. Louis	4.00	4.00	4.05	4.05	4.05	4.05
Lead, New York	4.15	4.15	4.20	4.20	4.20	4.20

*Refinery quotations; price 1/4c. higher delivered in Connecticut.

†Includes emergency freight charge.

Aluminum, virgin 99 per cent plus, 19c. to 21c. a lb., delivered. Aluminum, No. 12 remelt, No. 2 standard, in carloads, 16.25c. a lb., delivered. Nickel, electrolytic, 35c. to 36c. a lb., base refinery, in lots of 2 tons or more. Antimony, Asiatic, 12.75c. a lb., New York. Brass ingots, commercial 85-5-5-5, 8c. a lb., delivered; in Middle West 1/4c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse	
Delivered Prices, Base per Lb.	
Tin, Straits pig	53.50c. to 54.50c.
Tin, bar	55.50c. to 56.50c.
Copper, Lake	9.00c. to 10.00c.
Copper, electrolytic	9.00c. to 9.50c.
Copper, castings	8.75c. to 9.75c.
*Copper sheets, hot-rolled	15.00c.
*High brass sheets	13.62½c.
*Seamless brass tubes	15.37½c.
*Seamless copper tubes	15.25c.
*Brass rods	12.12½c.
Zinc, slabs	5.75c. to 6.75c.
Zinc, sheets (No. 9), c. a s k s., 1200 lb. and over	10.25c.
Lead, American pig	4.62½c. to 5.62½c.
Lead, bar	5.62½c. to 6.62½c.
Lead, sheets	7.75c.
Antimony, Asiatic	13.50c. to 14.50c.
Alum., virgin, 99 per cent, plus	23.30c.
Alum., No. 1 for remelting, 98 to 99 per cent	18.00c. to 19.00c.
Solder, 1/2 and 1/2	29.50c. to 30.50c.
Babbitt metal, commercial grades	25.00c. to 60.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse	
Delivered Prices per Lb.	
Tin, Straits pig	56.00c.
Tin, bar	58.00c.

Copper, Lake	9.00c.
Copper, electrolytic	9.00c.
Copper, castings	8.25c.
Zinc, slabs	6.00c. to 6.25c.
Lead, American pig	4.65c. to 5.00c.
Lead, bar	8.00c.
Antimony, Asiatic	15.00c.
Babbitt metal, medium grade	19.25c.
Babbitt metal, high grade	60.00c.
Solder, 1/2 and 1/2	32.75c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	5.75c.
Copper, hvy. and wire	5.62½c.
Copper, light and bottoms	4.62½c.
Brass, heavy	3.00c.
Brass, light	2.25c.
Hvy. machine composition	4.87½c.
No. 1 yel. brass turnings	4.00c.
No. 1 red brass or compos. turnings	4.37½c.
Lead, heavy	3.00c.
Zinc	2.25c.
Cast aluminum	10.62½c.
Sheet aluminum	12.00c.
	11.75c.
	13.50c.

THE IRON AGE, August 8, 1935—85

Fabricated Structural Steel

Awards in Good Volume—New Projects Lower

AMONG lettings of 21,450 tons, which compare with 4250 tons a week ago, awards for the Bonneville Dam project in Oregon, comprising cranes, gates and lock operating equipment, total 8485 tons. Dams at Clinton, Iowa, and Red Wing, Minn., account for 2210 tons. New projects of 10,300 tons compare with 22,600 tons last week and 9200 tons two weeks ago. The outstanding new job is 2000 tons for a post office in the Bronx, New York. A dam at Dubuque, Iowa, previously reported as requiring 1200 tons, will take 4000 tons. Plate lettings total 7165 tons. Sheet steel piling awards call for 2300 tons. Structural steel bookings for the week follow:

STRUCTURAL STEEL AWARDS

NORTH ATLANTIC STATES

Montague, Mass., 450 tons, bridge, to Boston Bridge Works, Inc.

Brownville, Me., 120 tons, bridge, to Berlin Construction Co.

Charcetown, Mass., 100 tons, Boston Elevated Railway garage, to New England Structural Co.

Brooklyn, 100 tons, bridge at Seventh Avenue and Thirty-seventh Street, for Brooklyn-Manhattan Transit Corp., to Norton Steel Co.

Brooklyn, 370 tons, power house for American Molasses Co., to Lehigh Structural Steel Co.

New York, 160 tons, alterations to elevators in Municipal Building, to Norton Steel Co.

New York, 380 tons, caisson segments for mid-town tunnel, to unnamed fabricator.

Tarrytown, N. Y., 175 tons, alteration to Chevrolet Motor Co. plant, to Norton Steel Co.

East Rockaway, N. Y., 145 tons, Pearl Street bridge, to American Bridge Co.

Haverstraw, N. Y., 340 tons, grade and high school, to Selback-Meyer Co.

Butler, Pa., 170 tons, addition for American Rolling Mill Co., to Jones & Laughlin Steel Corp.

Pittsburgh, 120 tons, Gulf Refining Co. service station, to American Bridge Co.

District of Columbia, 115 tons, addition and alterations to H. M. Browne school, to Dietrich Brothers.

THE SOUTH

Beaumont, Tex., 155 tons, furnace framing for M. W. Kellogg Co., to Belmont Iron Co.

New Orleans, 185 tons, State highway project No. 966-A, to unnamed fabricator.

CENTRAL STATES

Detroit, 600 tons, plant addition for Chrysler Corp., to McClintic-Marshall Corp.

Fort Wayne, Ind., 325 tons, bridge, to McClintic-Marshall Corp.

Fulton, Ill., 935 tons, gates, etc., for Mississippi River lock No. 13, to Milwaukee Bridge Co.

New Boston, Ill., 1085 tons, lock, to Independent Bridge Co.

Chicago, 150 tons, Murray-Wolbach building, to Wendingel & Co.

Chicago, 150 tons, building No. 13 for International Harvester Co., to Vierling Steel Works.

Illinois Central Railroad, 125 tons, bridge repairs at Dubuque, Iowa, to Gage Structural Steel Co.

Clinton, Iowa, 1150 tons, lock, to Milwaukee Bridge Co.

Le Claire, Iowa, 750 tons, lock, to Independent Bridge Co.

Red Wing, Minn., 1060 tons, lock, to Independent Bridge Co.

Leeds, Mo., 700 tons, Fisher Body works, to Kansas City Structural Steel Co.

Oshorn, Kan., 200 tons, bridge, to Kansas City Structural Steel Co.

WESTERN STATES

San Francisco, 390 tons, plate girders and floor beams for distribution structure at San Francisco Bay bridge, to American Bridge Co.

Anaheim, Cal., 270 tons, high school, to Minneapolis-Moline Power Implement Co.

Hollywood, Cal., 340 tons, sound stage for Fox Film Corp., to Consolidated Steel Corp.

Los Angeles, 180 tons, tunnel ribs for Metropolitan Water District, Specification 41285, to Commercial Shearing & Stamping Co.

San Quentin, Cal., 115 tons, prison addition, to Herrick Iron Works.

Oakland, Cal., 500 tons, tunnel hangers for Broadway low level tunnel, to Berkeley Steel Construction Co.

Fresno, Cal., 350 tons, city auditorium, to Minneapolis-Moline Power Implement Co.

Bonneville Dam, Ore., 6000 tons, gantry cranes and gates, to Columbia Steel Co.

Bonneville Dam, 637 tons, power house intake gates, to Worden-Alen Co.

Bonneville Dam, 1850 tons, lock operating equipment, to Pacific Coast Steel Corp.

Alaska, 500 tons, bridges for Department of Interior, to Duffin Iron Works.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

New York, 2000 tons, post office in Bronx.

New York, 215 tons, State highway bridge in Bronx.

New York Central Railroad, 150 tons, mail and service building at Syracuse, N. Y.

Central Railroad of New Jersey, 325 tons, bridge at Raritan, N. J.

Philadelphia, 100 tons, addition to Electric Storage Battery Co. plant.

Washington, 300 tons, two bridges connecting buildings of United States Department of Agriculture.

THE SOUTH

Parkersburg, W. Va., 1400 tons, State highway bridge at Fifth Street.

Louisville, Ky., 175 tons, school.

CENTRAL STATES

Cleveland, 430 tons, Easterly sewage service building.

Findlay, Ohio, 180 tons, addition to Ohio Oil Co. plant.

Columbus, Ohio, 190 tons, pump house.

State of Michigan, 375 tons, five bridges.

Lafayette, Ind., 150 tons, store.

Dubuque, Iowa, 4000 tons, dam, No. 11 Mississippi River, previously reported as 1200 tons.

WESTERN STATES

Boulder City, Nev., 250 tons, Boulder Dam, Specifications Nos. 699-D and 691-D.

San Francisco, 550 tons, Pacific Telephone & Telegraph Co. building; bids opened.

Honolulu, T. H., 115 tons, library; bids Aug. 8.

Matanuska, Alaska, 550 tons, bridge.

FABRICATED PLATES

AWARDS

Sea Cliff, Long Island, 160 tons, elevated water tank for Sea Cliff Water Co., to Tippett & Wood.

Alany, N. Y., 1255 tons, nine tanks, for Pan-American Petroleum & Transport Co., to Chicago Bridge & Iron Works.

New York and Maine, 335 tons, tanks, for Shell Eastern Petroleum Co.; 65 tons to Hammond Iron Works, 270 tons to Buffalo Tank Co.

Buffalo, 1190 tons, 36-in. water pipe, to Alco Products Co.

Media, Pa., 100 tons, County water tank, to Chicago Bridge & Iron Works.

Chicago, 315 tons, welded pipe, Division A, Southwest Sewage Works, to Taylor Forge & Pipe Works.

Airport, Ohio, 100 tons for pipe, to Alco Products, Inc.

Cincinnati, 3600 tons of plates and shapes for 24 steel barges for Raymond City Coal Co., this city, to Marion Steam Shovel Co.

Portland, Ore., 110 tons, survey boat for United States Engineers, to Lake Washington Shipyards.

NEW PROJECTS

Everett, Wash., 400 tons, 16 and 36-in. pipeline; bids soon.

Denver, 148 tons, intake works, conduits and dam for city water system; bids Aug. 8.

SHEET PILING

AWARDS

Clinton, Iowa, 1500 tons, lock No. 13, to Inland Steel Co.

Chicago, 800 tons, sewer contract No. 1, to Inland Steel Co.

NEW PROJECTS

New York, 500 tons, depressed roadway approach to Triborough bridge; contract No. 45; bids Aug. 8.

Railroad Equipment

Chesapeake & Ohio is inquiring for 100 automobile box cars, equipped with loaders.

RAILS

Pittsburgh & Lake Erie has placed 900 tons of rails with Carnegie Steel Co.

Lundie Engineering Corp. announces the removal of its offices to 19 West 50th Street, New York City.

Thermidor Electrical Manufacturing Co. announces its removal from 116 Llewellyn Street, Los Angeles, to 2821 East Pico Street of that city.

Buying in Philadelphia Area Improves—Rate Unchanged



Bending Charges on Reinforcing Bars Are Reduced—Rise in Bar Extras Forces in Tonnages—Scrap Strong

PHILADELPHIA, Aug. 6.—Repet orders are coming in more frequently, but demands are still almost entirely of a miscellaneous character. Even though total specifications are not yet in sufficient volume to warrant an optimism equal to that pervading other sections of the country, most steel sellers nevertheless view the fall period as holding considerable promise. Auto body stamping plants will be in the market for sizeable supplies before the end of this month. Alan Wood Steel Co. also will start delivery of frame stock by that time, with heavy shipments continuing through the turn of the year, and other district mills look for miscellaneous demand, railroad and ship purchases to increase to such an extent that much better operations will ensue.

Improved activity at Coatesville has not been sufficient to change the district operating rate. Consequently, operations in eastern Pennsylvania remain at 28 per cent of capacity. This rate compares with operations of 22 per cent a year ago and 46 per cent for the early August period in 1933. It is quite probable that several of the smaller district mills will soon add additional melting units, and Bethlehem also expects better activity in the near future. Thus the Philadelphia district rate should soon start to follow the national trend upward.

Pig Iron

Some malleable plants are booking further ahead. Also, stove makers are experiencing a seasonal upturn in business, which is being translated into heavier iron orders. It is now more evident that iron melters consider the market firm as regards to price and also view fall business prospects with greater equanimity. Not only are late third quarter orders more plentiful, but inquiries have been made concerning fourth quarter requirements. About 1000 tons of low-phosphorous iron, recently imported, will go to a steel mill in an adjoining district.

Sheets and Strip

Miscellaneous demand for sheets

and strip has shown no improvement. Stove makers are expected to come into the market more heavily in the near future, and auto body stamping plants will definitely be buying more steel by the end of the month. E. G. Budd Mfg. Co. has already purchased small quantities of sheets for die trials and expects to start heavy production of bodies for new automobile models by Sept. 1. Likewise, production will start at the same time on Chevrolet frames.

Bars

Secondary sellers of reinforcing bars have recently been so prone to shade extras for bending that several mills have announced a reduction in bending charges, effective immediately. Previously, a charge of \$6 and \$16 a ton was made for heavy and light bending respectively. The new charge will be \$4 and \$12 respectively. Advanced extras on hot-rolled steel bars have served to force in heavier tonnages as consumers and jobbers seek protection by ordering now for late third quarter delivery. These changes in extras apply to certain sizes of flats, rounds, squares and gothics, and the advances vary from \$1 to \$4 a ton. Changes on other hot-rolled products are also impending.

Shapes and Plates

Virginian Railway is in the market for miscellaneous bars, plates and shapes totaling about 1000 tons. Some of these requirements have already been placed through a Roanoke, Va., general contractor. The only plate award of any size during the week called for about 100 tons for a county water tank at Media, Pa., which will be erected by Chicago Bridge & Iron Works. One general contractor in this district is bidding on the relocation of Baltimore & Ohio Railroad tracks at Grafton, W. Va. Tenders are due on Aug. 19, and the project will require about 3000 tons of shapes. No general contract has yet been awarded on the ferryboat for the Virginia Ferryboat Corp. This job calls for 1000 tons of plates,

shapes and bars. As the boat will go into service next spring, an early award is expected. So far, public work expenditures for road and bridge construction have failed to materialize in either New Jersey or Pennsylvania. Fabricators and sellers of shapes, however, are still hopeful for heavier releases in the early fall.

Imports

The following iron and steel imports were received here last week: 2750 tons of chrome ore from British India; 64 tons of steel bands, 63 tons of steel bars and 16 tons of structural shapes from Belgium; 50 tons of steel tubes, 38 tons of steel bars and 6 tons of steel forgings from Sweden, and 29 tons of structural shapes from France.

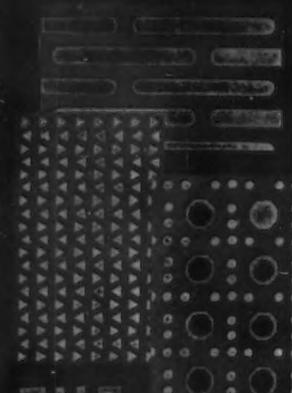
Scrap

This market now has all the aspects of activity and strength, what with brokers energetically endeavoring to cover on their recent 7000-ton sale of No. 1 to Worth Steel, five mills demanding shipments on outstanding No. 2 orders, and small dealers hanging on to their No. 1 and No. 2 supplies in expectation of higher offers. And these higher prices have materialized, for brokers are bidding as high as \$10.75 for No. 1, with \$11 in view, and \$10 is more than freely offered for No. 2. Admittedly, brokers have partially artificially fostered current bullishness, considering that district operations remain under 30 per cent. Nevertheless a market reaction is not nearly as probable today as it was several weeks ago. Price momentum seems likely to last for a few more weeks, and by that time Alan Wood may be forced to buy again. In addition, other district melters are already planning increased melting schedules. Thus, if Bethlehem's rate increases in proportion, the district rate should rise in the next six weeks to a point sufficiently high to support the even higher prices which appear to be on the way. E. G. Budd's monthly scrap list, which a local broker bid in last week, disclosed considerably higher offers for bundles and No. 1 steel.

Broker buying for export has ceased. A few carloads are arriving at Port Richmond as dealers complete outstanding tonnage contracts. Several partly loaded boats will leave during the next two weeks, cleaning up accumulations.

WESTINGHOUSE ELECTRIC & MFG. CO. has declared a dividend of 50c. a share on common stock payable Aug. 30 to stockholders of record Aug. 12. This is the first cash dividend authorized on the common stock since April 30, 1932, when 25c. was disbursed.

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Steel Output Rises In South

BIRMINGHAM, Aug. 6.—Last week two blast furnaces were banked and one blown in. The Tennessee Coal, Iron & Railroad Co. banked Fairfield No. 6 on July 29 and Woodward Iron Co. banked Woodward No. 3 on July 31, while Sloss-Sheffield Steel & Iron Co. blew in its No. 1 furnace on Aug. 1, going on a two-furnace basis. The present active total is five, the Tennessee company, Republic and Woodward with one each and Sloss-Sheffield with two. Four are on foundry iron and the other on basic.

Two furnaces are now being relined, No. 1 of Republic and No. 2 of Woodward.

Bookings continue to be made up of spot orders, but daily business is fair.

The general run of steel orders has been better the past ten days. Excluding rail tonnage, shipments in July were slightly ahead of those for June. With the agricultural marketing season near at hand, prospects for wire products and sheets are better. Ingalls Iron Works has been awarded a War Department contract for the construction of three steel dump scows, on a bid of approximately \$74,700. Steel will be fabricated at Birmingham and assembled at Chickasaw, from where they will be towed to Chesapeake City, Md., for delivery. Shipments will also be started this

week by Ingalls on steel for the Bay Bridge at Oakland, the contract amounting to about 1500 tons, and for the American Rolling Co. project at Middletown, Ohio, the contract amounting to about 2000 tons, of which about 1000 is being fabricated at Birmingham.

There was an increase of one open-hearth last week. Last Friday Gulf States Steel Co. fired a third unit and eight are now active in the district, the Tennessee company having five at Fairfield.

The slowness of the PWA program continues to restrict the pressure pipe market. Louisiana, Mo., will open bids Aug. 12 on about 300 tons and San Francisco Aug. 16 on about 2000 tons.

Demand Improved At Cincinnati

CINCINNATI, Aug. 6.—Dealer activity continues to strengthen the scrap market, although mill purchasing remains conservative. In fact, current sales are in small lots for urgent needs and no new commitments are reported. Some dealers report that scrap at present prices is difficult to obtain because of highly competitive bidding. Railroad lists recently closed brought higher prices than last month and recent offerings a week apart reflected an advance of \$1 a ton.

Demand for finished sheets reflects consumption above normal seasonal levels. Bookings, the past

week, approached 60 per cent of mill capacity. The unusual demand for galvanized sheets is being supplemented by good ordering from automotive users for completing current models as well as for new types. Prices are generally steady, although reports of higher quotations for fourth quarter on hot-rolled annealed are circulating.

Pig iron buying has been limited to carload lots totaling about 700 tons. Shipments on contract are steady and melters generally show no reluctance in accepting material. Foundry operations have moved upward to an average of about four days a week. Melters in Cincinnati are undergoing no difficulty in obtaining molders, but elsewhere in this area experienced foundry men are being sought.

Reflecting steady foundry operations, shipments of foundry coke are at a high summer level.

Mill Operations Up at St. Louis

ST. LOUIS, Aug. 6.—Offerings of scrap are reported to be very light. There are no railroad lists out and country dealers are inclined to hold their stocks. The latter report that extremely hot weather has slowed up their receipts from the farmers and they cannot get men to work in the heat. Dealers here expect larger offerings from the country next month. In the meantime, dealers' prices have been increased, 25c. a ton on Nos. 1 and 2 heavy melting steel, miscellaneous standard-section rails and rails for rolling, and 50c. a ton on steel rails less than 3 ft. and steel angle bars.

Although the hot weather has tended to slow down operations in some stove and other foundries, the pig iron melt in the district is being well maintained as a whole. Steel mills stepped up operations during the week. Shipments continue at the same level as last month and better than had been expected at this season. Melters and makers are looking forward to a good fall business, but orders continue on a hand-to-mouth basis.

Wire products, sheets and other seasonal items are moving in improved volume from warehouses, but there is little business being placed with the mills. Highway projects in Missouri, Illinois, Oklahoma and Kansas are being held up pending a decision as to which Governmental agency they will tie up with. Pelligreen Construction Co., St. Louis, is the low bidder on the general contract for the nurses' home for the local city hospital for negroes, requiring 220 tons of reinforcing bars.

Cleveland Rate Up Five Points to 50 Per Cent



Rise in Capital Goods Activity and in Private Construction Is Encouraging—Gain in Pig Iron Sales in July

CLEVELAND, Aug. 6.—With finished steel demand in this district continuing to advance over a wide front, ingot output in the Cleveland-Lorain territory has been advanced five points to 50 per cent of capacity. This increase is the fourth rise in as many weeks, the total gain having been nearly 50 per cent. Finishing mill schedules have not been increased so rapidly, as producers have let their stocks of raw steel reach a low point and are now preparing for a much heavier fall production.

Steel demand is still noteworthy because of its diversification rather than for its volume. In most cases orders are for relatively small lots, but practically all products are included and construction steel plays an important part. Makers of machinery and equipment representing the durable goods industries are more active takers of steel than are producers of refrigerators, stoves, light household equipment and other consumer goods. This relationship has probably not occurred in more than five years.

Purchases by the automobile industry, while increasing rapidly, are still of relatively minor character. The Ford Motor Co. is the only large producer which has been in this market for heavy steel tonnages, although Buick has been a sizable buyer because of its contemplated early introduction of new models. The Willys-Overland Co., at Toledo, Ohio, has been authorized to build 10,000 additional cars and will place the required steel in the near future.

Railroad demand is featured by an inquiry for 100 automobile box cars from the Chesapeake & Ohio. This road is not yet in the market for rails and the Wheeling & Lake Erie has not yet placed the 4000 to 5000 tons required for the relocation of its tracks in the Muskingum Conservancy District.

Pig Iron

Pig iron sales during July were about 20 per cent ahead of June. Activity during the past week was rather light, however, and sales of

a leading producer amounted to less than 5000 tons, which was below the company's July average. Foundry melt seems to be increasing gradually and even jobbing units are getting more business. One foundry specializing in this kind of work has been forced to sublet some of its business in the past week. Specialty producers are particularly active, while malleable foundries are operating at about the same level as in the previous week. Prices are very well maintained.

Sheets

Orders from the automotive industry are increasing, but sizable inquiries are still lacking. The new producer of sheets at Niles, Ohio, is now in production, making a full range of products except cold-finished material. Production in Cleveland and Monroe, Mich., is averaging at least 60 per cent of capacity and the current trend of orders indicates further improvement during the month. The trade here is

interested in the purchases of the Ford Motor Co., which still has an inquiry out for a large tonnage of sheets. Recent orders for sheets and strip steel combined by this company are estimated at 40,000 tons. The base price was adhered to on this purchase, but deep drawing extras of \$3 to \$7 a ton were waived and other buyers are now being extended the same privilege. Sheets sold without the drawing extra are not subject to breakage allowance by the consumer and the waiving of the extra is not a complete loss to the mills.

Strip Steel

This market is still comparatively quiet, but some improvement is reported. Automotive demand continues rather light, but a few orders are coming in from parts makers and a steady increase is expected throughout the month. Strip prices remain firm, despite the shading of extras on sheets, and sellers report that current orders are not of the type on which shading might be demanded.

Iron Ore

Water shipments of Lake Superior iron ore from upper Lake ports during July were 4,460,536 tons, an increase of 28,396 tons over the same month last year. Shipments until Aug. 1 were 12,606,029 tons, a gain of 1,082,504 tons over the corresponding period in 1934.

Reinforcing Bars

Demand is confined largely to small lots, most of which are for

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private projects. No action has been taken on any of the large pending jobs in this district and contractors are still shopping around for price concessions. The Elwell Parker Electric Co. will construct a factory building at Cleveland which will take 125 tons of reinforcing bars.

Bars, Plates and Shapes

Demand for the heavy hot-rolled products is characterized by a steady run of small miscellaneous

orders for construction steel. While the tonnages involved are not large, private work predominates and the aggregate is considered very satisfactory. A number of fairly large jobs are pending, but awards are often delayed as contractors shop around for a price concession. Thus far they have been unsuccessful except in the case of reinforcing bars from distributors. The Baltimore & Ohio is in the market for 2000 tons of shapes and 500 tons of bars for the relocation of its tracks in the Tygart River

Valley in West Virginia. The Ohio Oil Co. in Findlay, Ohio, will require 180 tons of shapes for a plant extension. The Pittsburgh & Lake Erie Railroad is in the market for 500 tons of beam spans and other structural steel. No action has been taken on any of the contracts in connection with the Easterly sewage disposal plant at Cleveland.

Bolts, Nuts and Rivets

This market is dormant, as automotive demand has not yet got under way and demand from other sources is spotty. The railroads are not in the market and such improvement as can be noticed is coming from the building industry. Prices are holding.

Scrap

The scrap market has gained further strength during the week and No. 1 heavy melting steel is now quotable at \$11 to \$11.50 a ton. This quotation is more or less nominal, as no consumer purchases have been reported and dealers are paying even more to cover sales in the Valleys. The other steel-making grades are also 50c. to \$1 a ton higher, but blast furnace and foundry scrap are unchanged at former levels.

**Deadlock on Guffey
Coal Bill**

WA SHING TON, Aug. 6.—Guffey coal nationalization bill is deadlocked among Democrats of the House Committee on Ways and Means and as a result there may be no action taken on the measure at the present session of Congress.

The President some time ago asked that it be passed and its constitutionality be left to the courts. At a lively three hours' meeting today of Democratic members of the Ways and Means Committee, it is reported to have voted nine to seven in favor of reporting the bill. The seven members, however, are reported to have declined to be bound by the unit rule, under which they would be required to vote with the majority.

Chairman Doughton said there is doubt as to what the full committee will do, and said he did not even know whether it will meet again. Unless further conferences break the deadlock, the bill is dead for this session.

The United Mine Workers of America has threatened a strike in the Appalachian region unless the bill is passed at the current session.

Steel Demand Lags In New York District



Decline in Tin Plate Business Not Yet
Offset by Gain in Other Lines—Grade
Separation Program Delayed Further

NEW YORK, Aug. 6.—The steel market is relatively quiet in this district, with total bookings somewhat smaller than in previous weeks when tin plate orders were conspicuous. The most encouraging aspect of the situation is that a larger proportion of current tonnage is coming from private sources and less is directly traceable to Government spending. Part of the steel for the 500 Norfolk Southern cars has been placed, according to reports from Chicago where the purchasing office of the Pullman-Standard Car Mfg. Co., which has the contract, is located. Oil companies are more active as buyers of storage tanks. The Pan American Petroleum & Transport Co. has placed nine tanks, requiring 1250 tons, with the Chicago Bridge & Iron Works for erection at Albany, N. Y. Shell Eastern Petroleum Products, Inc., has divided orders for nine tanks, requiring 335 tons, between two fabricators for erection in New York and Maine.

Nearly 3600 tons of structural steel, reinforcing bars and sheet piling is involved in contract No. 45, covering a depressed roadway approach to the Triborough bridge, New York, on which bids go in Aug. 8. Approximately 24,000 tons of steel will be required for 13 Navy vessels on which tenders will be submitted Aug. 7.

The city of Buffalo has awarded an order for 36-in. water pipe, requiring 1190 tons of steel plates, to Alco Products, Inc.

The narrowing of base sizes on bars, which amounts to an advance on certain sizes, has not stimulated much forward covering in this district. Here and there a buyer has protected himself by contracting under the present extras.

Efforts of buyers to contract for longer than the three-month period which was standard under the code have not been notably successful to date. However, there has been a minimum amount of contracting, since the price situation has not been conducive to forward covering.

Foreign steel continues to be a competitive menace, although the

volume being imported is apparently not reaching alarming proportions. The test of the PWA order requiring the purchase of foreign material when it is more than 15 per cent lower in price than domestic steel is not likely to come soon. In this part of the country grade separation and road programs are lagging to such an extent that it is improbable that they will result in orders before Jan. 1.

Pig Iron

Foundries continue to confine their orders to immediate needs. Most iron sellers, however, report a more uniform flow of repeat orders and a more complete acceptance of the firmness of present prices. Total sales of all furnace representatives amounted to 1800 tons last week, as compared with 1550 tons in the previous seven-day period and 1650 tons booked a fortnight ago.

Reinforcing Steel

Inquiry is sluggish, miscellaneous buying has become spotty and light,

and there are only a few active tonnages in the market. Naturally there is not enough work to go around; consequently fabricators are competing more energetically by sacrificing engineering and shop charges. Reductions in bending charges which were initiated in the Middle West are now applicable to some extent in the Philadelphia area. As yet the \$2 a ton cut for heavy bending and \$4 reduction for light bending have not been put in force locally.

Scrap

Sizable quantities of scrap in the Jersey City area hitherto going to export docks are now being attracted to four eastern Pennsylvania mills. However, brokers continue to secure sufficient export quantities to meet outstanding commitments at the regular \$8.50 and \$7.50 prices for No. 1 and No. 2 respectively. The current strength in the West has been imparted to this area in a sympathetic way in that dealers are withholding scrap supplies and foreign users are delaying new purchases.

Boston Scrap Market Gains in Strength

BOSTON, Aug. 6.—The scrap market is more active and stronger, prices averaging in most cases 25c. a ton higher. With a resumption of shipments of No. 1 heavy melting steel, bundled skeleton, steel turnings and shafting to the Pittsburgh area and breakable

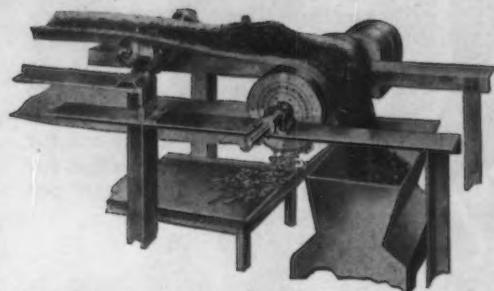
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DINGS MAGNETIC SEPARATOR CO.
727 Smith Street, Milwaukee, Wis.

cast to eastern Pennsylvania at improved prices, exporters have raised bids for Nos. 1 and 2 steel 25c. to 50c. a ton, and are buying against shipments to be made from here and Providence, R. I., later this month or early September. Some exporters have booked orders for six months ahead. A steamer is due here from Portland, Me., with 2000 tons of scrap rails on Thursday, Aug. 8, and will load 3000 tons additional rails, then going to New York for a final consignment. Although not especially active, the market for No. 1 machinery cast and textile cast is more so than it has been in some time, with prices up about 50c. a ton.

Pig iron sales are scattered and usually in small lots, with the weekly aggregate around 500 or 600 tons. Sentiment among melters, however, continues buoyant, and furnace representatives expect a pickup in business following Labor Day. Machine tool builders are freely taking iron bought previously for third quarter delivery. Small foundries, for financial reasons, are using a larger percentage of scrap in their melts than ever before.

Most jobs being figured by reinforcing steel bar firms are small, but there are quite a number of them, which gives the market the appearance of being moderately active.

Reinforcing Steel

Awards 4,800 Tons—New Projects
4,650 Tons

AWARDS

New York, 250 tons, bridge in Henry Hudson Parkway, to Joseph T. Ryerson & Son, Inc.

New York, 200 tons FERA purchases, distributed among several sellers.

Savannah, Ga., 200 tons, Union Bag & Paper Co. plant, to Standard Salt & Cement Co.

Winona, Minn., 500 tons, Mississippi River work, to Paper Colmanson, St. Paul.

Clinton, Iowa, 600 tons, Mississippi River lock, to Inland Steel Co.

Will County, Ill., 100 tons, bridge, to Concrete Steel Co.

El Monte, Cal., 250 tons, City Hall, to Blue Diamond Corp.

Los Angeles, 479 tons, Verdugo Wash Conduit from Del Valle Avenue to Mountain Street, to Security Materials Co.

Los Angeles, 757 tons, Pickens Channel conduit from Debris dam to Verdugo Wash, to J. W. Black Co.

Los Angeles, 1448 tons, for County flood control work, 801 tons to Soule Steel Co., 505 tons to Blue Diamond Corp., and 142 tons to Graham Brothers and Truscon Steel Co.

NEW REINFORCING BAR PROJECTS

Washington, 725 tons for Panama Canal; bids to be taken Aug. 19 by General Purchasing Officer of Panama Canal.

Cleveland, 300 tons, Easterly sewage service building.

Cleveland, 125 tons, building for Elwell-Parker Electric Co.

La Crosse, Wis., 240 tons, United States Soil Conservation Service; bids in.

Milwaukee, 2000 tons, second section of filter plant; plans out in about 30 days.

Minneapolis-St. Paul, 970 tons, Sanitary District.

St. Louis, 220 tons, Nurses' Home for city's negro hospital; Peilgreen Construction Co., low bidder on general contract.

San Diego, Cal., 100 tons, warehouse; bids opened.

Beverly Hills, Cal., 300 tons, building for W. & J. Sloan Co.; bids soon.

Pipe Lines

American-Michigan Pipeline Co., Muskegon, Mich., is considering welded steel pipe line from Austin Township, Muskegon County, natural gas field district to Grand Rapids, Mich., where natural gas will be furnished Grand Rapids Gas Light Co., for local distribution. Line will be an extension of trunk main now supplying service to Muskegon Gas Co., Muskegon. Glenn R. Chamberlain, president and general manager of Grand Rapids company, is president of pipeline company, both organizations subsidiaries of American Light & Traction Co., 105 West Adams Street, Chicago.

Lone Star Gas Co., 1915 Wood Street, Dallas, Tex., has let contracts for 20-in. welded steel pipe line from natural gas fields at Long Lake and Cayuga, Anderson County, Tex., to Irving, near Dallas, about 110 miles, to Oklahoma Contracting Corp., Magnolia Building, Dallas, and Ford, Bacon & Davis, Inc., 39 Broadway, New York; first noted has award for 67 miles from Irving to point near Trinidad, Tex., and latter company for remainder of distance to gas fields stated. Cost about \$2,000,000. L. B. Denning is president.

Harlan, Iowa, is considering welded steel pipe line for natural gas supply for municipality, including distributing lines. Special election will be called soon to approve project and provide funds. L. D. Billings is city clerk.

Gas Corp. of Michigan, Clare, Mich., has arranged for natural gas supply from McKay-Mercier gas fields, about eight miles, and plans early construction of 4-in. welded steel pipe line for natural gas service to Clare and vicinity.

Republic Steel Corp., Youngstown, Ohio, has secured contract for about 4400 tons steel pipe from Texas State Oil Co., Magnolia Building, Dallas, Tex., for welded steel line to oil field district, about 75 miles.

June Up 60 Per Cent In Structural Bookings

AMERICAN INSTITUTE OF STEEL CONSTRUCTION finds that the shops in this industry reporting to them operated at 38.3 per cent of capacity during June. This estimate was based upon reports received from plants owning 78 per cent of the capacity of the whole industry.

The June bookings were approximately 60 per cent larger than the average monthly bookings for the first five months of this year, but they just about equaled the bookings for the same month in 1934. The June shipments were approximately 14 per cent less than the shipments during June, 1934, but approximately 7 per cent larger than the average monthly shipments during the first five months of this year. The backlog of the industry is approximately 34 per cent less than last year.

Moderate Expansion in Steel Demand Is Continued in Youngstown Area

YOUNGSTOWN, Aug. 6.—Mills in this district report a general but rather moderate increase in demand which has been manifest since the middle of July. Production was stepped up to meet this condition late in the past month and no further gains have been registered. In fact, Bessemer steel production this week is slightly lower, and the district's aggregate production is holding in the neighborhood of 50 per cent of capacity. It is not likely that additional raw steel will be required until automotive purchases get under way in large volume, probably not much before Labor Day.

Sentiment in the Valleys is distinctly buoyant and was given further support by the announcement late last week that the Government has decided to drop its suit to prevent the proposed merger of the Republic Steel Corp. and the Corrigan, McKinney Steel Co. It is believed that final consummation of the merger will result in considerable plant improvements by the Republic company, and, of course, the eventual acquisition of the Truscon Steel Co. Republic has already let the contract for the complete modernization of its Stark sheet mills at Canton, Ohio.

The Youngstown Sheet & Tube Co. has started the cold-rolling unit of its continuous sheet mill and has also placed contracts for tube-making equipment which will produce thin-walled conduit up to 3 in. in diameter. This company has recently made improvements to its electric-weld unit which make possible the production of this kind of pipe ranging in outside diameter from 6% to 26 in. These and other improvements being carried on in the district indicate the industry's confidence in the future and also its belief in the potentialities of the Valleys.

One of the most encouraging developments of the last fortnight has been the steady expansion in demand for standard pipe. Jobber requirements have been growing, and, as stocks are comparatively low, it is evident that consignments will have to be built up in the near future.

Movement of sheets and strip steel is at a somewhat slower pace than was the case a month ago, but stamping plants are taking additional material for new automobile models and are expected to increase their requirements rather rapidly in the next month. Fabri-

cators of building products are busier and steel furniture makers are expanding operations. Household equipment for a wide variety of purposes is of growing interest to Valley sheet and strip mills, and new uses for steel are being developed steadily.

The independent companies in

this territory who have recently introduced high-tensile, corrosion-resistant steels are taking a number of experimental orders for many purposes. While railroad car and bus construction has provided the chief outlet for this type of steel, other uses are being developed.

The local scrap market is very strong and No. 1 heavy melting steel is quoted at \$12.50 to \$13. Dealers are paying in this range to cover orders taken at much lower figures.

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- "Lubrication in Honing and Lapping Operations"
- "The Lubrication Engineer—His Value to You"
- "Metal Forming Lubricants"
- "How to Cut Costs in Difficult Cutting Operations"

Inland-Ryerson Merger Meets Directors' Approval

MERGER of Inland Steel Co. and Joseph T. Ryerson & Son, Inc., has been approved by the boards of directors of the two concerns, subject in the case of each company to necessary action of stockholders and to compliance with applicable Governmental requirements. The plan, which was announced Aug. 5, was issued over the signatures of L. E. Block, chairman of the board, and P. D. Block, president of the Inland Steel Co., and Edward L. Ryerson, Jr., president, and Everett D. Graff, vice-president of the Ryerson company. Combined assets of the two companies will be in excess of \$116,000,000.

Specific details of the union are: Exchange of 0.59 share of Inland stock for each share of Ryerson stock. Operation of the Ryerson company under its present name and management as a wholly owned subsidiary of the Inland Steel Co. Edward L. Ryerson, Jr., president of the Ryerson company, is to be active with the Inland company as one of the chief executive officers, and three members of the Ryerson board of directors will become members of the Inland board. Under the terms of the proposed exchange, Ryerson stock, which sold Aug. 5 at \$46 1/2, is valued at \$49 and Inland stock is valued at its close at \$84 1/2.

An important aspect of this merger is that 75 per cent of the various steel products marketed by the Ryerson company through its 10 warehouses can be produced by the Inland company. Also, Inland will have its approach to Eastern markets amplified by the acquisition of this leading distributor of warehouse steel products. It is contemplated that Ryerson will handle Inland products in all territories where economically feasible.

Inland Steel Co. was incorporated under the laws of Delaware in 1917, succeeding its predecessor company which was incorporated under the Illinois laws in 1893. Officers of the original company were J. E. Porter, president; G. H. Jones, vice-president, and P. D. Block, treasurer. L. E. Block entered into the management of the company in 1897. This company, located near the source of raw materials and with mills designed for production of a well-diversified line, has a record of earnings that is outstanding in the steel world. It suffered its first loss in 1932 but made a profit in 1933.

Earnings in 1934 were \$3,700,000. In the first six months of 1935 earnings amounted to \$4,800,000, or \$4.05 a share.

The Ryerson company was started in 1842 in a small store at Clark and Water Streets, Chicago. Its founder was Joseph Ryerson of Philadelphia. In the years that followed the company grew steadily and occupied various locations in Chicago and gradually expanded its service to principal cities in the

Middle West and in the East. Warehouses are now maintained at Boston, Jersey City (which services the New York area), Buffalo, Philadelphia, Detroit, Cleveland, Cincinnati, Milwaukee, St. Louis and Chicago. In only two years, in 1931 and 1932, in the last 12 years has the Ryerson company operated at a loss. Both years the losses were small and were followed by profitable years which more than wiped out the total deficit. In 1934 the company earned \$781,000 and in the first six months of 1935 has operated at a profit slightly under the rate during the corresponding period of last year.

No definite date has been set for action by the stockholders.

No Foreign Bid on Florida PWA Job

WASHINGTON, Aug. 6.—No bid was made by any importing interest in connection with requirements of 3600 tons of sheet steel piling for harbor improvements to be made at Miami, Fla., a PWA-financed project. Reports were cur-

rent that foreign steel might be offered for this job and a test provided for the PWA order requiring the purchase of foreign supplies, where their price is 15 per cent less than the domestic price. It is reported that one reason for the absence of a foreign bid was due to specifications, and also that the State of Florida is opposed to the use of foreign material. Five domestic makers submitted bids.

July Shows Increase in Steel Production

PRODUCTION of open-hearth and Bessemer steel ingots in July was 2,270,224 gross tons, according to a report from the American Iron and Steel Institute. This was an increase over the previous month of 39,431 tons. Total ingot production for the corre-

sponding month of 1934 was 1,489,453 gross tons.

The daily output for July was 87,316 gross tons, which was slightly under that of June, but there were 26 working days in the former as compared with 25 in the latter.

REPORTED BY COMPANIES WHICH IN 1934 MADE 97.91 PER CENT OF THE OPEN-HEARTH AND 100 PER CENT OF THE BESSEMER INGOT PRODUCTION

	Reported Production (Gross Tons)		Calculated Monthly Production—All Companies		Number of Working Days	Per Cent of Operation
	Open-Hearth	Bessemer	Monthly	Daily		
1934						
January	1,786,458*	172,489	1,997,129†	73,968†	27	33.59†
February	1,993,465*	175,873	2,211,944†	92,164†	24	41.86†
March	2,540,243*	203,904	2,798,440†	103,646†	27	47.07†
April	2,822,531*	257,482	2,936,064†	117,443†	25	53.34†
May	3,003,676	331,620	3,399,494†	125,907†	27	57.18†
June	2,718,782*	222,592	3,059,483†	117,672†	26	53.44†
July	1,340,924*	119,869	1,489,453†	59,578†	25	27.06†
Seven months	16,006,079	1,543,829	17,892,007	98,851	181	44.79
August	1,245,139*	109,598	1,381,350†	51,161†	27	23.24†
September	1,127,269*	117,615*	1,268,977†	50,759†	25	23.05†
October	1,325,777*	127,789	1,481,902†	54,885†	27	24.93†
November	1,447,626*	132,059	1,610,625†	61,947†	26	28.13†
December	1,794,437*	131,467*	1,964,257†	78,570†	25	35.68†
Total	22,946,327*	2,162,357*	25,599,118†	82,312†	311	37.38†
1935						
January	2,576,671	239,858	2,871,531*	106,353*	27	48.04*
February	2,500,062	224,336	2,777,765*	115,740*	24	52.28*
March	2,582,211	230,810	2,868,141*	110,813*	26	49.83*
April	2,358,249	231,916	2,640,504*	101,558*	26	45.87*
May	2,331,297	254,796	2,635,857*	97,624*	27	44.10*
June	1,978,180	210,487	2,230,893	89,236	25	40.31
July	2,003,011	224,456	2,270,224	87,316	26	39.44
Seven months	16,329,681	1,616,659	18,294,915	101,077	181	45.70

*Revised.

†Adjusted.

Shorterizing, Surface Hardening

(CONTINUED FROM PAGE 17)

factory results are obtained by the Shorter treatment. Naturally, the actual degree of hardness obtained on the surface is entirely dependent on the carbon content of the steel. Microscopic examinations of steel sections which had been Shorterized were stated by Doctor Swinden to reveal a moderately fine line of demarcation between the hardened and normal steel. When examining the transitional area, it was found that a fairly broad band of martensite was at the edge, and this merged into an area of martensite containing some troostite, then into an area of troostite-sorbite and finally into the normal sorbitic steel. No appreciable difference could be detected between various alloy steels. In the case of common carbon steel, the martensite was slightly coarser and broke down earlier and rather more sharply into the various transitional areas, thus giving a wider band of troostite before finally merging into the normal structure of the steel.

Doctor Swinden Shorterized seven different types of steel and also measured the depth to which the steel was affected by the surface-hardening process. The analysis of the steels tested as well as the results of the hardness determinations are shown in Table III. Note how the hardness increased with the carbon content and how the martensite decreases and the depth of troostite increases with increasing carbon.

PERSONALS

(CONTINUED FROM PAGE 60)

Empire Sheet & Tin Plate Co., Mansfield, Ohio.

♦ ♦ ♦

ERNEST G. DRAPER, vice-president of the Hills Brothers Co., packer of Dromedary dates and other food products, has been named Assistant Secretary of Commerce to succeed DR. JOHN DICKINSON, recently made Assistant Attorney General in charge of the anti-trust division of the Department of Commerce. Mr. Draper is also vice-president of the Dromedary Co. of California, operating date plantations in Mesopotamia, and of the Scoville Canning Co. He was formerly a

SAVE Metal Cutting Costs with the WELLS Metal Cutting BAND SAW



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Simple
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EXTREME precision, long blade life, ability to run at high speed continuously without coolant, and to cut all shapes and thickness of metal within the capacity of the machine make the Wells metal-cutting band saw indispensable in reducing production and maintenance costs.

Rigid saw guides insure accuracy, thereby avoiding loss of time in aligning or re-cutting material. No idle strokes eat up time, thereby effecting a 30 to 50 per cent

saving in labor costs per cut. Excessive friction is eliminated and no time is wasted in cooling the blade. Fine wearing quality and low initial cost reduce blade expense. Versatility in cutting at any angle, any shape or any thickness of metal gives high efficiency of operation. Simple and sturdy construction insures long life and few repair bills despite hard usage.

All plants doing any metal-cutting work need this time-saving cost-reducing unit. Send for the illustrated circular.

WELLS MANUFACTURING CORP.
THREE RIVERS MICHIGAN

member of the Business Advisory Council. From 1912 to 1920, Mr. Draper was president of the American Creosoting Co.

♦ ♦ ♦

DR. WILLIAM OTIS HOTCHKISS, for the past 10 years president of Michigan College of Mining and Technology, has been elected to the presidency of Rensselaer Polytechnic Institute, succeeding the late Dr. Palmer Chamberlain Ricketts.

♦ ♦ ♦

WILFRED SYKES, who has been associated with the Inland Steel Co., Chicago, since 1923, has been elected a director, succeeding the late EDWARD M. ADAMS. Mr. Sykes has been assistant to the president of the Inland company since 1930.



WILFRED SYKES

WILLIAM J. HAMMOND has been appointed vice-president in charge of railroad sales of the Inland Steel Co. Mr. Hammond, who has been traffic manager of the Inland company since 1926, succeeds CHARLES R. ROBINSON, who was appointed first vice-president and general manager of sales a short time ago. Beginning his business career in 1901 as a clerk in the Chicago freight office of the Illinois Central Railroad at Chicago, Mr. Hammond held various positions with that railroad, culminating in his appointment as contracting freight agent, in 1911. The following year he left the Illinois Central to take a similar position with the Union Pacific Railroad Co. In 1913 he became traveling freight agent for this railroad and four years later Eastern car service agent. He went to Inland Steel Co. in 1918 as assistant traffic manager. RALPH R. FLYNN, who succeeds Mr. Hammond as traffic manager, began his business career as a clerk in the Chicago office of the Indiana Harbor Belt Railroad in 1908. After holding various positions with that company he resigned in 1912 to accept a position in the traffic department of the Inland company at Indiana Harbor, becoming assistant traffic manager in 1926.

♦ ♦ ♦

FRANK P. COX, for the past 15 years manager of the West Lynn works of the General Electric Co., will retire from active service Sept. 1. Mr. Cox is a native of Terre Haute, Ind., and went to Lynn in 1885.



Plant Expansion and Equipment Buying

Summer Tool Demand Still Above First Half Rate

DEMAND for machine tools eased slightly the past week from the level of the previous period, but volume is still better than the average of the first half. Most noticeable in current business is the demand from aviation, munitions and automobile manufacturers. Orders for milling machines and grinders are in leading volume, but lathes are rapidly assuming more popular attention. Current bookings for heavy machines are occasional, but in more frequency than a year ago.

Having felt the burden of heavy inventories, a number of tool manufacturers are not replenishing stocks, but are keeping only a small amount of tools in storerooms to meet sudden demands. The problem of obtaining castings has eased somewhat, but the demand for skilled mechanics still absorbs available supply.

◀ NORTH ATLANTIC ▶

American Can Co., 230 Park Avenue, New York, has filed plans for new branch plant at Tampa, Fla., where 20-acre tract has been selected. It will consist of main unit, 185 x 535 ft., storage and distributing building adjoining about same size, garage and service building, office and miscellaneous structures. Cost close to \$250,000 with equipment. Contract for structural steel has been let to Jones & Laughlin Steel Corp., Pittsburgh.

Atmospheric Nitrogen Corp., 40 Rector Street, New York, affiliated with Solvay Process Co., same address, plans addition to works at Hopewell, Va., including equipment. Cost over \$350,000 with machinery. Both companies are subsidiaries of Allied Chemical & Dye Corp., New York.

Board of Education, Troy, N. Y., plans manual training department in new multi-story high school. Cost about \$1,000,000 with equipment. Financing will be arranged through Federal aid. F. J. Morgan, Second Street, is architect.

United States Industrial Alcohol Co., 60 East Forty-second Street, New York, has let general contract to Barney-Ahlers Construction Corp., 101 Park Avenue, for two-story addition to plant at 400 Doremus Avenue, Newark, N. J. Cost close to \$50,000 with equipment.

Signal Supply Officer, Army Base, Brooklyn, asks bids until Aug. 13 for 12 portable signal generators (Circular 4).

North American Aviation, Inc., 1775 Broadway, New York, manufacturer of airplanes and parts, a subsidiary of General Motors Corp., same address, has leased about 20 acres at Mines Field, Los Angeles, as site for new Pacific Coast plant for parts production and assembling. Initial operations will be given over primarily to military and naval airplanes, for

which company has large contracts. Construction will begin in September. Cost about \$500,000 with equipment. J. H. Kinselberger is president.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 13 for 2828 sets twist drills and 1788 metal stands for Brooklyn, Philadelphia, San Diego and Puget Sound Navy Yards (Schedule 5667); until Aug. 16, brass and copper pipe and tubing for Brooklyn, Philadelphia and Charleston Navy Yards (Schedule 5698); until Aug. 20, eight thermally-operated safety valves and spare parts for Brooklyn and Philadelphia yards (Schedule 5687).

Quartermaster Supply Officer, Army Base, Brooklyn, asks bids until Aug. 29 for five four-wheel electric tractors and 100 trailers, capacity 5000 lb. each, platform 36 x 72 in., and 19 in. high (Circular 23).

Grammer, Dempsey & Hudson, Inc., Newark, N. J., recently organized with capital of \$100,000 to operate a merchant iron and steel business, has leased former Barlow Foundry, 212-40 Rome Street, totaling 35,000 sq. ft. floor space, and will remodel for new storage and distributing plant. At early date a steel fabricating plant will be installed in part of structure. New company is headed by Paul O. Grammer, formerly vice-president, James A. Coe & Co., 401 Washington Street, iron and steel, who will be president; Donald T. Dempsey, recently resigned as secretary of Edgecomb Steel Corp., 350 Frelinghuysen Avenue, and James Hudson, formerly connected with Bethlehem Steel Co.

State Purchase Commissioner, State House, Trenton, N. J., asks bids until Aug. 12 for guard rail fittings, guard rail cable, etc., for highway service.

Commanding Officer, Picatinny Arsenal, Dover, N. J., asks bids until Aug. 13 for five three-spindle, one five-spindle and one

six-spindle motor-driven drill presses (Circular 16).

Quartermaster Depot, Twenty-first and Johnston Streets, Philadelphia, asks bids until Aug. 15 for steel nipples, cast iron pipe fittings, malleable iron unions, globe valves, angle valves, gate valves, check valves, washers, etc. (Circular 33).

Philco Radio & Television Corp., Tioga and C Streets, Philadelphia, has let general contract to Stewart Brothers Co., 3509 North Tenth Street, for rebuilding No. 6 plant, recently destroyed by fire. Cost close to \$400,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 13 for solderless electric connectors (Schedule 5668); until Aug. 20, 500 aircraft suction regulating valves (Schedule 5703) for Philadelphia Navy Yard.

E. I. du Pont de Nemours & Co., Wilmington, Del., has acquired property at South San Francisco as site for new Pacific Coast plant for manufacture of paints, varnishes, lacquers, oils, etc. Cost over \$150,000 with equipment.

Kutztown Foundry & Machine Works, Kutztown, Pa., which has been operating under receivership for past two years, was recently sold at public auction to a group of men holding \$300,000 worth of bonds in company. New owners have reorganized as Kutztown Foundry & Machine Works, Inc., with Norman E. Richards, Wyomissing, president; Irvin Baer, Philadelphia, vice-president; George W. Bieber, Kutztown, secretary; Oscar H. Dietrich, Kutztown, treasurer. Paul D. Barto, formerly superintendent of machine shop, will be a member of board of directors.

◀ NEW ENGLAND ▶

Waterbury Tool Co., Waterbury, Conn., manufacturer of hydraulic transmissions, precision variable transmissions, parts, etc., has let general contract to Allyn Wadham Co., 15 Lewis Street, Hartford, Conn., for one-story addition, 31 x 235 ft. Equipment installation will increase present production about 30 per cent. Cost over \$65,000 with machinery. Company is affiliated with Sperry Corp., 40 Flatbush Avenue Extension, Brooklyn.

School Board, Somerset, Mass., plans manual training department in new two-story junior and senior high school. Cost over \$175,000. Israel T. Almy, 49 Purchase Street, Fall River, Mass., is architect.

Ben-Burk, Inc., 560 Harrison Avenue, Boston, distiller, has work under way on remodeling former factory of Vose Piano Co., 1010 Massachusetts Avenue, totaling about 260,000 sq. ft., recently acquired for new distilling plant. General contract has been let to Canter Construction Co., 6 Beacon Street. Arthur Rosenstein, 120 Milk Street, is architect. Cost about \$250,000 with equipment.

Atlantic Refining Co., 205 Church Street, New Haven, Conn., has let general contract to T. J. Sullivan, 393 Chapel Street,

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AO GOGGLE
in Ful-Vue



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from the **FUL-VUE** Glasses Come Its Comfort *and Good Looks*
... from the New Arched Lens Comes Its Strength

Unobstructed Vision—High-set endpiece takes hinge and earpiece out of line of sight—removes every obstruction to full vision—gives dressy appearance of the most popular style of glasses.



Rocking Pearl Pads—Universal pivot supports allow the pads to adjust themselves to the sides of the nose—no slipping. No pressure. No metal to dig in or irritate.



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Here is a new goggle that will make your eye safety program far easier to enforce... *far more effective in saving eyes and dollars.*

The AO Ful-Vue goggle has all the comfort... all the dressy, dignified appearance of the famous Ful-Vue Glasses... high-set end pieces... pearl nose pads and many other features. In addition it has the new High-Arc 6-Curve lens—*virtually twice as strong*. It is the ideal eye protection for most machine operators—for *all* workers requiring open-frame goggles.

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Made without scrap especially for the foundry and malleable trade



JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
PITTSBURGH, PENNSYLVANIA

for new bulk oil storage and distributing plant, with main unit about 150 x 500 ft. Tank capacity will total close to 1,200,000 gal. Cost about \$100,000 with tanks and other equipment. Company headquarters are at 260 South Broad Street, Philadelphia.

◀ BUFFALO DISTRICT ▶

Bausch & Lomb Optical Co., 635 St. Paul Street, Rochester, N. Y., manufacturer of precision instruments and equipment, parts, etc., plans expansion, including installation of new equipment. Fund of about \$650,000 has been arranged for this and other special development work. T. B. Drescher is vice-president.

National Grinding Wheel Co., Inc., Erie Avenue, North Tonawanda, N. Y., manufacturer of abrasive products, will soon begin superstructure for two-story addition, 80 x 100 ft., for which general contract recently was let to G. Schaaf Co., 258 Kingsley Street, Buffalo. Cost over \$40,000 with equipment. C. H. Field, Village Hall, Williamsville, N. Y., is engineer.

Standard Oil Co. of New York, 1100 Elk Street, Buffalo, operating Socony-Vacuum Oil Co., same address, has leased property at Jamestown, N. Y., for new bulk oil plant and service station, on site 150 x 130 ft., to include steel tanks and other facilities. Cost about \$45,000.

◀ SOUTH ATLANTIC ▶

American Oil Co., American Building, Baltimore, plans new bulk oil storage and distributing plant at Pensacola, Fla., where site has been selected. Cost over \$60,000 with tanks and other equipment.

United States Engineer Office, Jacksonville, Fla., asks bids until Aug. 12 for one cast carbon steel five-vane runner for dredging pump (Circular 25), one cast steel flap valve for dredge (Circular 27).

John G. Kain, which will take over property at once. Reconditioning and modernization will be carried out and plant placed in operation soon.

◀ WESTERN PA. DIST. ▶

Joy Mfg. Co., Buffalo Street, Franklin, Pa., manufacturer of loading machines, conveyors, oil well supplies, etc., has plans for two one-story additions. Cost about \$55,000 with equipment.

Socony-Vacuum Oil Co., Inc., 26 Broadway, New York, has purchased tract, 160 x 400 ft., on Robb Street, Pittsburgh, for new bulk oil storage and distributing plant, with steel tanks, pumping station and other facilities. Cost over \$80,000 with equipment.

Warren Baking Co., Warren, Pa., has approved plans for three additions, including new air-conditioned cooling unit. One structure will be used for service, repair and garage building for company motor trucks. Entire project will cost over \$50,000 with equipment.

◀ WASHINGTON DIST. ▶

Procurement Officer, Chemical Warfare Service, Edgewood Arsenal, Md., asks bids until Aug. 19 for mechanical blower and motor units in lots of 31 to 60, starting rheostats in lots of 31 to 60, and disconnecting switches, similar lots (Circular 4).

Annapolis Metropolitan Sewerage Commission, Old High School Building, Annapolis, Md., asks bids until Aug. 20 for new pumping plant at Eastport, Md. Cost over \$70,000 with equipment.

General Purchasing Officer, Panama Canal, Washington, asks bids until Aug. 19 for one concrete road machine, one squaring shears, two 2000-lb. capacity scales, 10,000 sheets galvanized corrugated roofing, boiler feed pump, steel carriage bolts, steel machine bolts, steel nuts, steel rivets, iron or steel plate washers, galvanized wire rope, brass bolts, rubber-insulated cable and 54,000 lin. ft. copper wire cloth, 12,000 sq. ft. steel wire cloth, 18,200 lin. ft. galvanized steel wire cloth (Schedule 3078).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 13 for 4800 pneumatic chisel blanks for Norfolk, Va., Navy Yard (Schedule 5686); insulated electric cable (Schedule 5636); electric flame-proof cable (Schedule 5635); until Aug. 16, fuel oil service pumps and spare parts (Schedule 5649) for Eastern and Western yards.

◀ MIDDLE WEST ▶

Bliss & Laughlin, Inc., 155th Street, Harvey, Ill., manufacturer of turned steel shafting and kindred steel products, has let general contract to N. H. Hobson, Harvey, for one-story addition. Cost close to \$75,000 with equipment.

City Council, LaSalle, Ill., has been authorized to arrange bond issue of \$750,000 for new municipal electric light and power plant, including building and equipment. Financing will be carried out through Federal aid. Work will begin soon.

United States Engineer Office, Rock Island, Ill., asks bids until Aug. 27 for new dam No. 11, Mississippi River, including locomotive crane, service bridge truck, crane track, operating machinery, roller gate machinery, gate heaters, steel castings, iron castings, rigid metal conduit, steel forgings, etc. (Circular 10).

State Commissioner of Purchases, 120 State Capitol Building, St. Paul, Minn., asks bids until Aug. 13 for extensions and improvements in power house at institution at Willmar, Minn., including new water-tube boiler and accessories, stoker and other equipment. G. M. Orr & Co., Baker Building, Minneapolis, are consulting engineers.

Bureau of Reclamation, Denver, asks bids until Aug. 13 for electrical supplies, cables, terminals, etc. (Req. A-23065).

Village Council, Spring Valley, Minn. asks bids until Aug. 15 for new municipal electric light and power plant, with Diesel engine-generating units, fuel oil tanks, switchboard equipment, electrical distribution lines and facilities. Fund of \$110,000.

ON GUARD TO SCOTCH FIRE HAZARDS



Operating from centrally located offices in 44 principal cities, IRM-trained fire prevention engineers cover the country. Their constant study of fire, its causes and habits, results in an elimination of hazards which is directly reflected in decreased insurance costs to our policy holders. Their work is a safeguard, too, against loss due to interruption of business.

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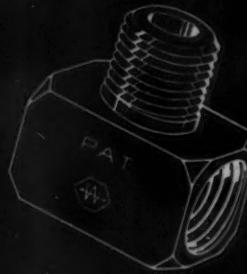
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is available. G. M. Orr & Co., Baker Building, Minneapolis, Minn., are consulting engineers.

Quartermaster Depot, 1819 West Pershing Road, Chicago, asks bids until Aug. 16 for 1000 galvanized fire buckets (Circular 13).

City Council, Tyler, Minn., J. D. Rix, city clerk, has authorized purchase of new equipment for municipal electric light and power plant, including engine unit and accessories. Cost about \$31,000.

Louis Allis Co., 427 East Stewart Street, Milwaukee, manufacturer of electric motors, speed reducers, etc., is completing work on one-story shop extension, 60 x 120 ft.

International Harvester Co., 606 South Michigan Avenue, Chicago, has plans for a \$125,000 addition, 93 x 120 ft., to its branch house at Green Bay, Wis., for sales and maintenance of motor truck department. Present building will be remodeled for tractor and agricultural machinery department. George M. Ahlschwede is branch manager.

E. G. Zabel Co., Neenah, Wis., recently incorporated with \$35,000 capital stock to manufacture printing and duplicating machinery, has leased third floor of Jersild Knitting Co. mill and is installing equipment for production to start about Aug. 15.

Daniel C. Bleser, Manitowoc, Wis., is forming company to build brewing and bottling plant, first unit of which will cost about \$75,000. Richard Griesser & Son, 64 West Randolph Street, Chicago, are architects.

SOUTHWEST

Fisher Body Division, General Motors Corp., Detroit, has let general contract to S. Patti Construction Co., 1114 Broadway, Kansas City, Mo., for two-story addition to branch assembling plant at Leeds, Mo., 40 x 800 ft., for production of bodies for Chevrolet Motor Co., Detroit, which has branch assembling works on adjoining site. Cost over \$400,000 with equipment. Chevrolet company has awarded contract to same company for one-story addition to Leeds plant, 120 x 270 ft. Cost about \$175,000 with equipment. Albert Kahn, Inc., New Center Building, Detroit, is architect and engineer.

Obear-Nester Glass Co., East St. Louis, Ill., manufacturer of hollowware, has approved plans for new one-story addition for large increase in capacity. Cost about \$230,000 with machinery.

Western States Grocery Co., 7 North De troit Avenue, Tulsa, Okla., with headquarters at Vernon, Los Angeles, will soon take bids on general contract for new two-story and basement two-unit storage and distributing plant, to occupy two city blocks, at Tulsa. Cost over \$400,000 with mechanical-handling, loading and other equipment. Joseph R. Koberling, 569 South Peoria Street, Tulsa, is architect.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 13 for one three-wheel industrial tractor for station at Kansas City, Mo. (Schedule 5689).

Mallinckrodt Chemical Works, 3600 North Second Street, St. Louis, has purchased plant of Buck Stove & Range Co., on adjoining block, comprising group of 12 buildings, and will remodel, primarily for storage and distribution.

Magnolia Petroleum Co., Magnolia Building, Dallas, Tex., has selected about five acres on waterfront at Brownsville, Tex., as site for new bulk oil storage and distributing plant, with battery of steel tanks for storage. Cost close to \$80,000 with equipment.

Shelby Metal Products Co., Shelby, Ohio, manufacturer of spring hinges and other hardware specialties, has plans for one-story addition, primarily for storage and distribution. Cost about \$25,000 with equipment.

American Stove Co., Lorain, Ohio, has let general contract to T. J. Hume, 435 Hamilton Avenue, for one-story addition, 60 x 120 ft., in part for storage and distribution. Cost about \$30,000 with equipment.

American Stamping Co., 978 East Sixty-fourth Street, Cleveland, manufacturer of stamped metal products, has let general contract to Ray P. Adams, 975 Roanoke Road, for one-story addition and improvements in present plant. Cost close to \$25,000 with equipment.

Contracting Officer, Material Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Aug. 12 for 32 wing-type hydraulic jacks (Circular 69); supercharger relief valves assemblies (Circular 71); until Aug. 14, 1000 thermocouple assemblies (Circular 64), lamp cap assemblies, lamp assemblies, mount assemblies, landing lamp screws, socket assemblies, lamp socket sleeves, landing lamp retaining ring assemblies, running lamp mounting plates, running lamp clamp screws, running lamp reflectors, etc. (Circular 62); until Aug. 15, utility switch assemblies, connector panel assemblies, four-contact plug assemblies, shielded receptacle panel assemblies, etc. (Circular 65), six-blade propeller hub assemblies (Circular 72); until Aug. 16, 300 engine ring cowling assemblies (Circular 34); until Aug. 21, drift-type meter assemblies in lots of 507 to 800 (Circular 58).

United States Engineer Office, Zanesville, Ohio, asks bids until Aug. 13 (postponed from July 30) for metal service gates and accessories for various dams (Circular 3).

Board of Trustees, Indiana State Hospital, Lincoln Avenue, Evansville, Ind., will soon take bids for new one-story machine shop and power house, comprising boiler and engine units, 72 x 87 ft. Cost over \$60,000 with equipment. Harry E. Boyle & Co., Furniture Building, Evansville, are architects.

International Harvester Co., 606 South Michigan Boulevard, Chicago, Motor Truck Division, will soon take bids for additions to branch works at Fort Wayne, Ind., comprising one-story machine shop, 270 x 360 ft.; two-story service and repair building, 60 x 100 ft., and one-story special equipment shop, 90 x 120 ft. Cost over \$600,000 with equipment.

MICHIGAN DISTRICT

Chevrolet Motor Co., 3044 West Grand Boulevard, Detroit, has let general contract to J. A. Utley, 6031 Mansur Street, for new one-story forge shop. Cost over \$60,000 with equipment. Albert Kahn, Inc., New Center Building, is architect and engineer.

Briggs Mfg. Co., 11631 Mack Avenue, Detroit, manufacturer of steel automobile bodies, etc., has asked bids on general contract for one-story addition to branch plant at Evansville, Ind., 120 x 470 ft., with office unit adjoining, 40 x 50 ft. Cost over \$150,000 with equipment. New structure will be used for production of bodies for Plymouth automobiles, which company, Plymouth Motor Corp., Detroit, will also carry out expansion program at former Dodge works at Evansville.

Arrow Distillers, Inc., 3539 Concord Street, Detroit, has filed plans for one-story addition to main distilling plant. Cost close to \$25,000 with equipment.

Benton Harbor Malleable Industries, Inc., Benton Harbor, Mich., Gray Iron Division, plans early rebuilding of part of plant recently destroyed by fire. Loss about \$50,000 with machinery.

Ford Motor Co., Dearborn, Mich., has approved plans for one-story plant at Northville, Mich., for engine valve manufacture. Cost over \$200,000 with equipment.

PACIFIC COAST

John McClure, Inc., Selma, Cal., distiller, has let general contract to Trewitt-Shields Co., Pacific Southwest Building, Fresno, Cal., for new one-story distillery. Cost about \$45,000 with machinery. Morgan, Walls & Clements, 210 West Seventh Street, Los Angeles, are architects.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 16 for seven portable electric drills (Schedule 5680); until Aug. 20, 10 2-ton and 10 1/2-ton chain hoists (Schedule 5681); until Aug. 23, storage batteries and battery parts (Schedule 5699) for Mare Island Navy Yard.

Walnut Growers' Association, 1777 Lafayette Street, San Jose, Cal., has let general contract to Frank Neves, 891 Harrison Street, Santa Clara, Cal., for one and three-story basement addition to packing plant, 60 x 100 ft. Cost over \$40,000 with mechanical-handling and other equipment. William Lotz, 35 West San Carlos Street, San Jose, is engineer.

Bureau of Reclamation, Denver, asks bids until Aug. 14 for three 667-kv. transformers, three single-throw, gang-operated air break switches, lightning arrester, expulsion fuses, outdoor switching and metering equipment, and accessories for Imperial Dam electric station, All-American Canal System, Boulder Canyon Project, Arizona-California-Nevada (Specification 704-D); until Aug. 19, eight two-speed gear motors,

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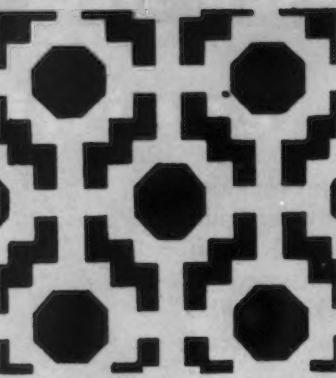
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**WICKWIRE SPENCER
perforated metals**

with reduction gears, or eight two-speed motors only for cylinder gate hoist on intake towers, Boulder Dam power plant, Boulder Canyon Project (Specification 707-D).

◀ FOREIGN ▶

Consett Iron Co., Ltd., Consett, Durham, England, has approved plans for addition and general improvements in works, including new equipment. New unit will be equipped for production of heavy rails. Cost over \$250,000 with machinery.

Ford Motor Co., Dearborn, Mich., is concluding negotiations with Government Cabinet at Warsaw, Poland, for construction of plant in that country. Cost over \$500,000 with equipment.

Municipal Council, Capetown, South Africa, M. B. Williams, clerk, has authorized addition to municipal electric generating plant on Dock Road. Machinery requirements, for which bids will be asked soon, will cost close to \$5,000,000.

Bavarian Aluminum Co., Munich, Germany, plans new hydroelectric power plant on River Inn, with output to be used in connection with expansion in production of aluminum, synthetic nitrate and kindred products. Cost over \$2,000,000 with machinery.

Trade Publications

Impact Wrench.—Ingersoll-Rand Co., Phillipsburg, N. J. Bulletin. Picturizes the adaptability of the gear-reversible, air-cooled impact wrench in railroad, ship yard, oil refinery, pump and automobile assembly work. Gives equipment details and size specifications.

Furnaces.—Hevi Duty Electric Co., Milwaukee, Wis. Bulletin, HD 585. Illustrates utility and describes construction and operation of multiple unit electric muffle furnaces as employed in laboratories and in experimental test work.

Hoods.—E. D. Bullard Co., 275 Eighth Street, San Francisco. Leaflet. Describes styles and types of smoked horsehide weld-

ing hoods. Illustrates the vision openings employed.

Paper Machines.—Cameron Machine Co., 61 Polar Street, Brooklyn, N. Y. Catalog, giving detailed descriptions of slitting and rolling machines together with standard and special uses covering a wide range of equipment. Several pages devoted to attachments for standard machines. Utility of machines covers paper, boards, transparent materials and foils.

Tapping Machines.—Armstrong-Blum Mfg. Co., 333 North Francisco Avenue, Chicago. Folder announcing a new line of horizontal tapping machines. Sizes, capacities and speeds specified. Introduction of bulletin No. 500.

Band Grinder.—Walls Sales Corp., 96 Warren Street, New York. Leaflet covering features in a new abrasive band grinder, designated as "Hormel-M," designed for roughing, smoothing and finishing operations.

Sketch Paper.—Wade Instrument Co., 2274 Brooklyn Station, Cleveland. Folder descriptive of a new "perspective" lined sketch paper, an improved "isometric" lined sketch paper, and of Wade drawing instruments.

Balancers.—Independent Pneumatic Tool Co., 600 West Jackson Boulevard, Chicago. Folder announcing the "Thor" perfect balancer. Descriptive of drum, housing, hooks, safety device and adjustment features.

Welders.—J. D. Adams, Indianapolis, Ind. Bulletin covering features of a new vertical, d. c., arc-welder. Illustrations and sectional diagrams clarify both mechanical and electrical operation.

Conveyors.—Chain Belt Co., Milwaukee. Bulletin, 25 pages. Elaborate illustrations of installations in many industries including the handling of agricultural and forest products and use in construction work. Presents the wide adaptability of the com-

pany's belt, chain and bucket equipment in combination with the idler-roll design employed.

Speed Lathes.—Schauer Machine Co., Cincinnati. Bulletin, illustrating the utility of the equipment in final operations on a variety of work. Describes patented automatic brake and its action. Gives specifications of different types and lists standard and special equipment.

Air Filter.—Coppus Engineering Corp., Worcester, Mass. Bulletin. Describes in detail an automatic, self-cleaning, dry-air filter. Gives specifications covering various types of industrial application.

Motors.—Crocker-Wheeler Electric Mfg. Co., Ampere, N. J. Catalog, 16 pages. Detailed illustrations of component parts of the modern synchronous motor and its development since 1905. Specifications covering a number of important applications to industrial requirements.

Forgings.—Kropp Forge Co., 5301 West Roosevelt Road, Chicago. Bulletin descriptive of company facilities for the production of commercial forgings, including machining and heat-treating operations.

Cable Cutter.—Mechanical Products Corp., Purdy Avenue, Port Chester, N. Y. Folder. Outlines advantages claimed in a new mechanical device for cutting different types of protected cables. Illustrates operation of the tool in various applications.

Speed Reducers.—Janette Mfg. Co., Chicago. Bulletin, 10 pages. Compact information including prices on motorized speed reducers. Necessary engineering information for figuring reducer applications is given.

Panelboard Data.—Crouse-Hinds Co., Syracuse, N. Y. Bulletin giving Underwriter specifications, classes, industrial groupings and detailed description as to application of various dust-tight boards for hazardous locations.

Washfountains.—Bradley Washfountain Co., Milwaukee. Catalog. Photographic illustrations of washfountains, showers, group shower and dressing room combinations as well as various types of drinking fountains for industries, schools and institutions. Installation drawings with dimensions. Description of each separate product.

Insulation.—General Electric Co., Schenectady, N. Y. Bulletin, 12 pages. Covers rubber and rubber-like compounds for insulating and sheath applications. A bulletin of text and tables.

Pyranol Capacitors.—General Electric Co., Schenectady, N. Y. Booklet, 26 pages. "Improving power-factor for profit." Applications, illustrations, diagrams, tables and charts.

Gages.—Consolidated Ashcroft Hancock Co., Inc., Bridgeport, Conn. Catalog, 62 pages, 11 x 8. Detailed descriptions and illustrations of the many types of gages made by the Ashcroft American Division and including indicating gages, recording gages, Duragages, gage testers and gage boards. The equipments are in dial sizes from 2 1/2 in. up to 36 in. for services such as water, steam, air, oil, gas, brine and chemicals in pressures up to 25,000 lb. per sq. in. Complete gage information, including charts and diagrams, is given.

Copper-Alloy Steel.—Inland Steel Co., Chicago. Leaflet listing applications of copper-bearing steel and citing its economical use for combating corrosion.

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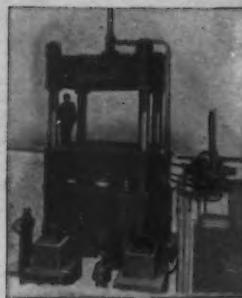
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How Funds for State Road and Grade Separation Work Have Been Allocated

Apportionment of Funds by States for Highway Construction

Alabama	\$4,151,115
Arizona	2,569,841
Arkansas	3,352,061
California	7,747,928
Colorado	3,395,263
Connecticut	1,418,709
Delaware	900,310
Florida	2,597,144
Georgia	4,988,957
Idaho	2,222,747
Illinois	8,694,099
Indiana	4,941,255
Iowa	4,991,664
Kansas	4,994,975
Kentucky	3,726,271
Louisiana	2,590,429
Maine	1,676,799
Maryland	1,750,738
Massachusetts	3,262,885
Michigan	6,301,414
Minnesota	5,277,145
Mississippi	3,457,552
Missouri	6,012,652
Montana	3,676,416
Nebraska	3,870,739
Nevada	2,248,074
New Hampshire	945,225
New Jersey	3,129,805
New Mexico	2,871,387
New York	11,046,377
North Carolina	4,720,173
North Dakota	2,867,245
Ohio	7,670,815
Oklahoma	4,580,670
Oregon	3,038,642
Pennsylvania	9,347,797
Rhode Island	989,208
South Carolina	2,702,012
South Dakota	2,976,454
Tennessee	4,192,460
Texas	11,989,350
Utah	2,067,154
Vermont	924,306
Virginia	3,652,667
Washington	3,026,161
West Virginia	2,231,412
Wisconsin	4,823,884
Wyoming	2,219,155
District of Columbia	949,496
Hawaii	926,088
Eng. & Adm. Res.	5,000,000
Totals	\$200,000,000

Apportionment of Funds by States for Grade Separation

Alabama	\$4,024,617
Arizona	1,256,099
Arkansas	3,574,060
California	7,486,362
Colorado	2,681,567
Connecticut	1,712,684
Delaware	418,239
Florida	2,827,883
Georgia	4,895,949
Idaho	1,674,479
Illinois	10,307,184
Indiana	5,111,096
Iowa	5,600,679
Kansas	5,246,258
Kentucky	3,672,387
Louisiana	3,213,467
Maine	1,426,861
Maryland	2,061,751
Massachusetts	4,210,833
Michigan	6,765,197
Minnesota	5,395,441
Mississippi	3,241,475
Missouri	6,142,153
Montana	2,722,327
Nebraska	3,556,441
Nevada	887,260
New Hampshire	822,484
New Jersey	3,983,826
New Mexico	1,725,286
New York	13,577,189
North Carolina	4,823,958
North Dakota	3,207,473
Ohio	8,439,897
Oklahoma	5,004,711
Oregon	2,324,204
Pennsylvania	11,482,613
Rhode Island	699,691
South Carolina	3,069,956
South Dakota	3,249,086
Tennessee	3,903,979
Texas	10,855,982
Utah	1,230,763
Vermont	729,857
Virginia	3,774,287
Washington	3,095,041
West Virginia	2,677,937
Wisconsin	5,022,683
Wyoming	1,360,841
District of Columbia	410,804
Hawaii	453,708
Totals	\$200,000,000

Bucyrus-Erie Co. Holds "Open House"

BUCYRUS-ERIE Co., South Milwaukee, Wis., was host to more than 7000 visitors on Saturday, July 20, when it held an open house as part of the celebration of the centennial of the city of South Milwaukee. Guests were escorted through the 24-acre plant in small groups, visiting all of the numerous shops. Among the products seen by visitors were: 200-ton railway crane; 95-ft. boom for an immense 750-ton shovel with 22-cu. yd. dipper; the dipper contrasted with a 3/4-yd. dipper; one of four crawler units to support largest excavating machine ever built, a 30-yd. electric revolving shovel weighing 1000 tons; and many other parts and complete products. It was pointed out that the steel foundry has a capacity of 1500 tons of castings a month; that there are more than 2 1/4 miles of industrial railroad track in the plant; it uses 11,500,000 kw. hr. of electrical energy annually, seven times the demand of the entire city of South Milwaukee; consumes 130,000,000 gal. of water a year, compared with the city's annual consumption of 86,000,000 gal.; consumed 26,000 tons of coal a year, or 520 carloads, and 1,500,000 gal. of fuel oil. In an informal talk, N. Rulison Knox, vice-president, general chairman of the open house, also pointed out that Bucyrus-Erie Co.'s South Milwaukee payroll in the past 25 years has aggregated \$50,000,000, and that from 1912 to 1934 inclusive the company has disbursed \$5,386,590 in Federal, State and local taxes. The total payroll of Bucyrus-Erie and affiliates at present is 2880 persons. Each visitor received a copy of a memorial edition of "The Scoop," employees' magazine, the men cigars and the women and children candy. W. W. Coleman, president, and other executives were present throughout the day and assisted.

LAND STEEL CO. and subsidiary companies, Chicago, reported net income after deducting administration expense and charges for repairs and maintenance, of \$4,148,423.95 for the quarter ended June 30. Deduction of interest on bonds, depreciation and depletion and estimated Federal taxes left a net profit of \$2,392,509.64. A dividend of 50c. a share and an extra dividend of 25c. a share were declared on capital stock payable Sept. 3 to stockholders of record Aug. 15.